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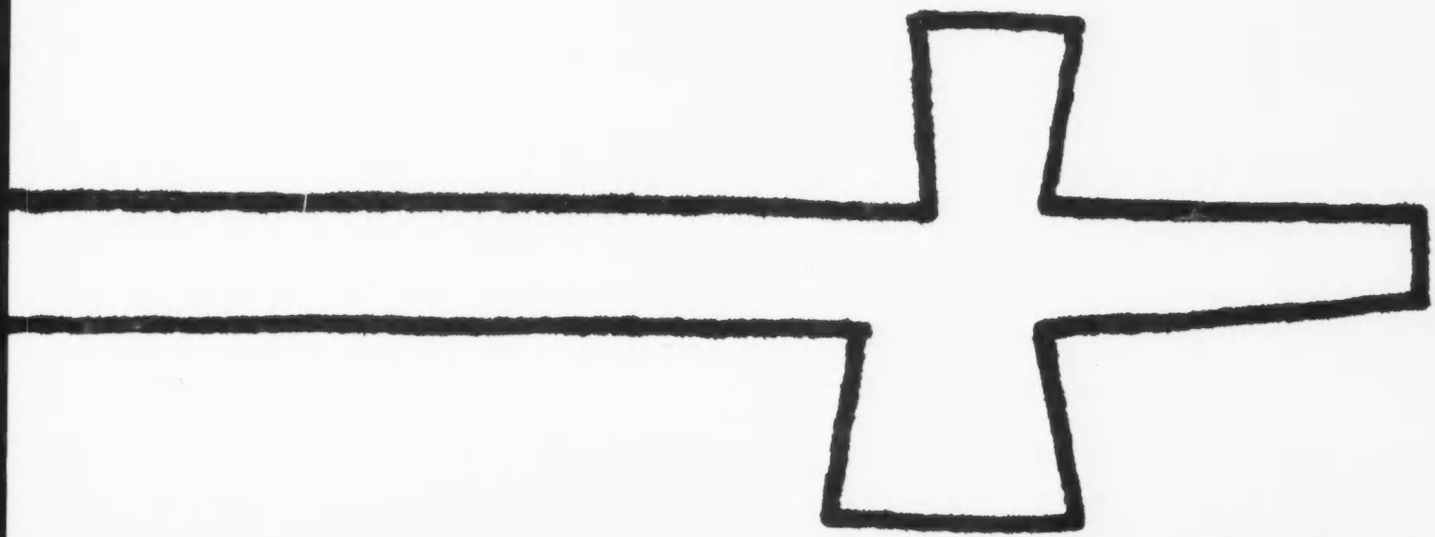

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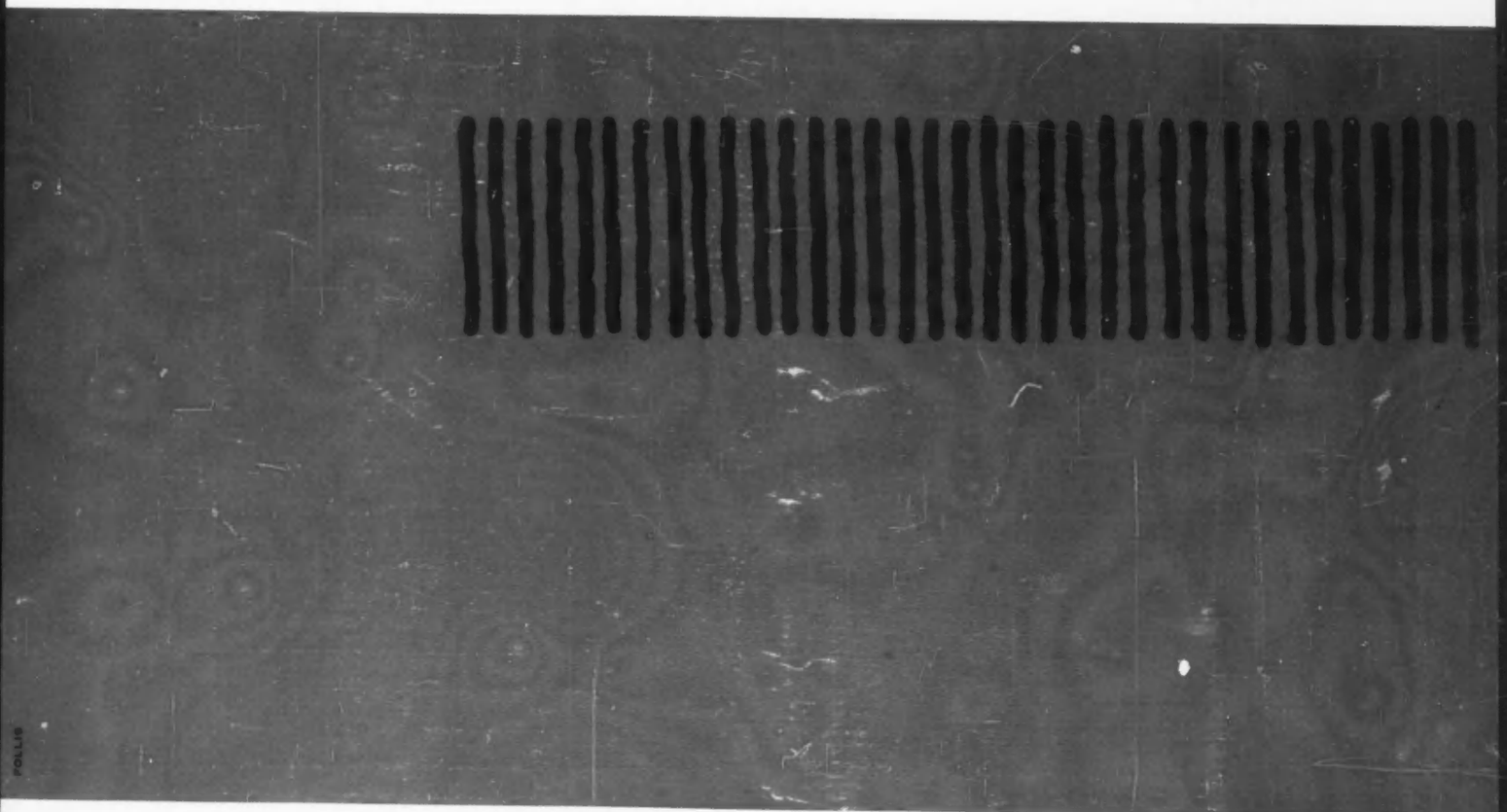

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ARTS & ARCHITECTURE is published monthly by John D. Entenza, 3305 Wilshire Boulevard, Los Angeles 5, California. Established 1911. Second class postage paid at Los Angeles, California. Price mailed to any address in the United States, $5.00 a year; to foreign countries, $6.50 a year; single copies 50 cents. Printed by Wayside Press. Editorial material and subscriptions should be addressed to the Los Angeles office. Return postage should accompany unsolicited manuscripts. One month's notice is required for a change of address or for a new subscription. The complete contents of each issue of ARTS & ARCHITECTURE is available to subscribers in a Microfilm edition.

Vol. 78, No. 12

ART

DORE ASHTON

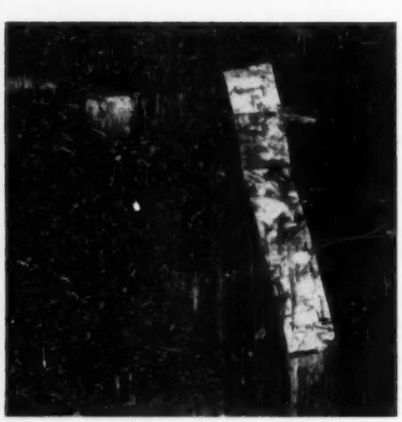
> "Many think that cubism is an art of transition, an experiment which is to bring ulterior results. Cubism is not either a seed or a foetus, but an art dealing primarily with forms and when a form is realized, it is there to live its own life."
>
> —Picasso

Picasso's remarks were aimed no doubt at the critics—faithless intellectualizers who descend like locusts to explain the life out of his art. Typically the 20th-century critic scans the horizon hopefully for signs of what will be "ulterior results." He is rarely satisfied with a form that is leading its own life but assumes that each form is leading to something else. Chastened by history, he hurries on trying to keep pace with artists' intuitions of the future. He is anxious and harried, scarcely able to linger and enjoy a work of art, still less to see it in its own terms.

But perhaps a work of contemporary art is not meant to be seen in its own terms. Certainly in the omnibus exhibitions that have become the chief means of bringing contemporary art to its public the single painting becomes virtually meaningless. It is the ensemble which counts. This is nobody's fault but is probably the new form painting has taken. The seeming homogeneity of "Abstract Expressionists and Imagists," an important exhibition at the Guggenheim Museum organized by H. Harvard Arnason, was its most significant trait. Not true homogeneity, but apparent unity imposed by an institutional environment.

For the contemporary viewer the attitude Picasso objected to—that each movement must be assessed in terms of its ulterior results—is unavoidable. Assess we must. In this exhibition Arnason sets about to assess abstract expressionism and its recent developments. His judgments take an intelligently reticent form. Aware of the trap history lays for the critic he avoids fixed categories and inflexible designations. In fact, he writes in his catalog foreword that the term abstract expressionism itself will become merely a broad and inaccurate label for certain exciting experiments which were carried on by widely different painters in the United States about the middle of the 20th century. To be absolutely sure he is not misunderstood, Arnason concludes his essay saying, "In a sense there are no art movements. There are only artists."

This is a humanistic attitude, a belief in the validity of individual differences with which I wholly identify. Yet, as I



Michael Goldberg

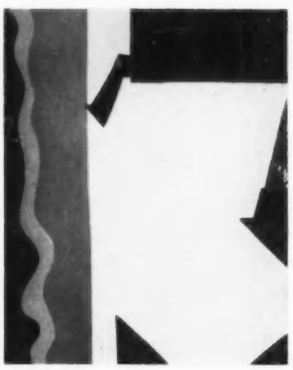
Menhirs of Carnac
1961

Courtesy The Solomon R. Guggenheim Museum

Lent by Martha Jackson Gallery

hastened down the ramps, with their ribbon-like flow of paintings moving by me (you cannot do anything but hasten on those ramps, they are not designed for lingering) I had to keep reminding myself that each picture was done by someone alone in a studio who hesitated, contemplated, changed, scraped out, kept it going perhaps for months, and presumably had a unique experience. Constrained to wrench the paintings out of the museum environment I had to question my own approach. Perhaps I am wrong to insist on the uniqueness of each painting; to try to restore the aura of the atelier to it. Perhaps these pictures are meant to be seen as part of a teamwork scheme to which I bring an outdated humanism. The museum is, by express design, a place for spectacle, not contemplation.

Time itself apprehended so differently today makes a difference. Rembrandt after all had an utterly different temporal experience. Even if he did manage to finish some paintings in the heat of *alla prima* creation—maybe in one morning's quick brushing—for most paintings he had spent many hours preparing the grounds, the glazes and undertones and waiting for parts to dry before he could finish up with an emotional flourish. Today it is difficult to imagine working that way just as it is



Al Held

Untitled, 1961
Lent by Poindexter Gallery

Willem de Kooning

Untitled, 1961
Lent by Sidney Janis Gallery

Courtesy of The Solomon R. Guggenheim Museum

an effort to imagine contemplating a single picture for hours. We are used to processions of images, inundation, and our senses are no longer geared to the pace of other centuries.

Obviously the relationship of spectator, painter and painting has changed. When I saw this show my first question was: how much is the building itself an imposition? It forces the viewer to see many things at once. (Who stands with his back to the other side of the ramp feels its presence siren-like anyway.) It forces him to have distance since when he looks across, he can see each work in its broadest outlines. Such enforced detachment helps insure an ensemble effect. The intimacy of the painter's experience in the studio—if it existed in the first place—can not be transmitted. Is this the new function of painting then, to be an element in an environment? An environment, at that, which is plastered with billboards and public "art."

But no, it can't be a "new" function. If I think of Malevich's pioneer essay with its pages of illustrations of the various "environments" that stimulate painters, I must admit that the idea has been with us for a long time. Malevich showed a page with plough horses, a hunting dog, a peasant family and a man with an accordion as the "reality" that stimulates the Academician. Then a page of zeppelins, boatyards, girders, and criss-crossing searchlights as the environment stimulating the Futurist. But the Suprematist is inspired in a far more detached way. His world is the distant aerial-view world of bridges, city-plans, rivers, and airplanes in a sky without an horizon. Everything seen from a greatly detached point of view.

As modern as this detachment is, I fight it. But at the Guggenheim the odds were against me. Even the lighting is designed to flatten out each painting so that it appears congruent with its neighbors. In one of the queerest lighting arrangements ever made for paintings, the light came from the back as well as the front of the picture. The thin pattern that is left even in paintings intended to be more painterly is suitable to the jig-saw effect of the unified spectacle.

Eventually, with effort, the spectator can move up close and try, as Arnason did, to see the individual documentary evidence of the movement. Arnason provides an invaluable aid in his catalog by reviewing the history of the movement and its evolution during a period of some fifteen years.

He speculates on the significance of the movement as a movement and focuses on its recent evolution. He distinguishes between abstract expressionists and what he calls "imagists."

"It is a fact that from the late Forties to the present day certain painters loosely grouped with the Abstract Expressionists have rather been concerned through extreme simplification of their canvases—frequently to the dominant assertion of a single overpowering element—in presenting an all-encompassing presence. This 'presence' could be described as an 'image' in the sense of an abstract symbol rather than as a reflection or imitation of anything in nature."

Newman, Rothko, Gottlieb and Still are among Arnason's imagists. He contends that "there is actually at present time a substantial tendency among both free and precise abstractionists toward a process of simplification of forms with an accent on large abstract color shapes whose expressive intent makes of the entire painting an abstract image."

I could argue with the definition of image and mysterious presence (a mixture of smaller elements does not cancel the possibility of a mysterious presence) but I must agree in seeing a pronounced tendency to simplification and reduction. The frenetic need to get rid of things keeps hitting us periodically in the 20th century, and at the rate we are going, we may well be rid of everything before long.

Many of the paintings illustrating the imagist wing of the movement, particularly those by the younger generation, appear to be emblematic, an emblem being the visible symbol of an idea. After several times around however, they begin to look more like devices. The difference between an emblem and a device is only a slight shade in connotation but an important one: the device is the next step after the emblem in which the idea has been simplified, made more tractable and more practical for repetition. The word "design" appears in the definition of the device but is absent from the definition of an emblem.

The large painting by Alfred Leslie is a good example of a device. Leslie compounds a number of already established conventions: the drip, the frayed arching line, the single stripe dividing two planes, the diagonal bar to suggest movement. In his painting the emblems of what were ideas some time ago become elements of picture-making, pure and simple.

Flattening-out and geometrisation in free-style painting can be seen as a repetitive development in modern history. I fail to understand the awed excitement the new imagists provoke. Interregnum French painting saw countless artists turn from equally "expressionist" idioms to the clean hard edges and flat patterning introduced by Leger, Mondrian, Van Doesburg et al. Experiments with pure color and pictorial design were rife. The startling simplicity of Stella was matched by Victor Vasarely whose unorthodox formats and use of hallucinating stripes hit Paris long ago. The "hard-edge" corner of modern painting was often a refuge in the past for painters weary of thick matiere and impulsive stroking. Of course, Americans retain a certain amount of approved crudity in their experiments. I don't mean to be grudging about the "new" painting but since its newness is what is claimed to be its distinction, precedents do count. (I am not referring to painters such as Sander, Leon Smith, Ad Reinhardt to mention a few whose work doesn't strike first through novelty but through conviction.)

It is certainly true that the grand formats most of these imagists prefer make a difference. But is it enough of a difference to warrant the feverish attempt to make of them a new movement? (Arnason, by the way, is not guilty of this, but others have raised a fuss all out of proportion over the "new" painters.)

The need to reach mural proportions has been with us since the beginning of the abstract expressionist movement, as the room of classics (Tomlin, Newman, Still, Pollock, etc.) proves. In rejecting easel painting they did more than submit to modern conditions and demands. But it seems to me that their successors accommodate society in its thirst for rapid image, reproduceable image and the bang-bang impact. In their midst, Rothko whose subtle color gradations are disastrously blotted out by the lighting from behind, looks positively conservative. So does Motherwell whose 17-foot mural with its "event" carefully calculated both in its displacement of space and its unfurling progression, can take its place comfortably in the larger French mural tradition.

Among the few imagist paintings that lived up to Arnason's condition of the mysterious presence, I would place Dugmore's, in which a black form like the flayed and stretched hide of a beast, successfully plays against a white background suggesting spaces and events behind the illustory flatness of the foreplane. I thought, too, that Michael Goldberg's painting with its white line skidding dramatically in front of a turbid landscape-like setting fulfilled the larger claims made for the imagists.

Ironically the earliest painting in the show is a Matta titled "The Disasters of Mysticism." Maybe if this show were repeated in twenty years, it would bear the same title. The accent on faith is unmistakable in much of the work. Total reliance on intuition usually develops into a vice. There is a reduction of conflict that is fatal to art when the artist collapses into the comfort of mindlessness. The vice of reckless faith with its concomitant loss of irony is reflected not only in so-called action painting as it is practiced today, but in the imagist painting as well. Pushing around "elements" is just as dangerous as responding wholly to the doubtful impulses engendering what Fitzsimmons used to call intra-subjective painting.

Philip Guston

Duo, 1961

Courtesy The Solomon R. Guggenheim Museum

Lent by Sidney Janis Gallery

Reduction of conflict is too often mistaken for the sublime ideal of simplicity. I won't even comment on the error. I will point to the breathtaking simplicity of Matisse's cut-outs at the Museum of Modern Art and challenge the sensibility of anyone who has seen them. There *is* a difference. Simplicity and simplicism must not be confused.

This brings me back circular fashion, as befits a Guggenheim show, to the problem of the relationship of the viewer to the painting. The spectacular simple paintings carry the day at the Guggenheim. Significantly, intimate paintings in which the abstract image is secreted both in the matter of the paint and in the mutliple planes in which it is wrought, fare badly. Tobey for instance is quite lost. Even Guston, whose painting is definitely a superior example of his work, is shouted down for all but the most serious and determined viewers. The simplicity of Tobey or Guston is not geared to the simplicity of billboard immediacy. They could easily be passed over in favor of Morris Louis' unprimed canvas with its set of stripes huddled together in the center—an image that is effective once but is a device when repeated.

What is wrong, then, when two of the outstanding American painters (there were a few others as well) are nearly lost in the pageantry connected with contemporary art? Have we carried simplicity and rapid digestion to an excess which Matta would ironically have called a disaster of mysticism?

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MUSIC

PETER YATES

SOUND

This written lecture on *Sound* was prepared for the national convention of the American Society of Industrial Design and reproduced by them with several pages of notes on the compositions which made up the audible lecture. The breadth of this subject, which here I have condensed into a rather brief statement, has provoked me to attempt several very long programs, for the most part with taped examples. Last year at Houston my fourth lecture, on Electronic and Noise Music, began somewhat after 7:30 pm and ran until the last question had been answered at approximately 11:30. This year, again for the Contemporary Arts Association at Houston, the show began at 8 and ended some time after 12:30 am. A local critic, who did not stay the course, ended her review: "Everyone hailed Yates as a devoted scholar with no idea of time. If he studied his Confucius closely, he'd have remembered that 'He who play music long, have short audience.'" To which, having my Confucius, I replied "Who elsewhere not hear."

The program included not only the long series of taped examples I had prepared, culminating in a 20 minute selection from Harry Partch's *Revelation in the Courthouse Park*, a work I find the more marvellous the more often I hear it, but also several items I had proposed as alternatives or additions, without expecting all of them to be provided. Among them were the *Ileac Quartet* composed by an electronic computer under the program guidance of Jerry Hiller at the University of Illinois, played by the New String Quartet of Houston; Two Pieces for Kettle Drums by Elliott Carter played by tympanist David Wuliger; and a film *Music Studio: Harry Partch*, obtained from *Cinema 16*, New York, which shows the composer demonstrating his instruments—a film I recommend highly to any music school interested in becoming acquainted with Partch's rather inaccessible compositions. Each of these ran much longer than I had anticipated. I do believe that those who stayed to the end, though they did not remain to ask questions, felt they had their money's worth. My rival in the field of extended lecturing, the famed Buckminster Fuller, is reported to have kept his Houston audience in suspended concentration for seven hours. Why should persons who really wish to do justice to a large subject expect to go home until they have covered the ground?

The program for the American Society of Industrial Design, given at the St. Catherine Hotel on Catalina Island, included much of the same material but added to it a sequence of abstract films, some with sound, by my fellow lecturer John Whitney. These admirable studies in dynamic visual abstraction should be more widely known than they are. This time we overestimated the capacity of our audience, sunburned after a boat trip across the channel, and had to cut the demonstration short about three-fifths of the way through. But I believe we put over our "message."

Here follows the article on *Sound* prepared for that occasion. Regular readers of this column have gone over much of the ground in earlier articles, and my audience at the University of Illinois Biennial of Contemporary Arts last April heard it in much greater extension, but I believe that the material as here presented may convey in succinct form the thinking behind most of my recent lecturing and writing.

No entry under *Sound* appears in my *Oxford Companion to Music* or in my 1904 edition of *Grove's Dictionary of Music and Musicians*. Professional thinkers about music, until lately, have thought of Music as one thing and Sound as something else. Now there is at the San Diego Naval Laboratories a section called *Music and Noise*.

Technical talk about Sound as a musical phenomenon starts with mention of Pythagoras, a Greek philosopher who believed he could set up order in the cosmos by expressing all relationships among the parts of things in terms of simple whole numbers. In his experiments Pythagoras found that such relationships do exist among the perfect intervals of tones obtained by plucking a stretched string.

These simple mathematical relationships among tones, dis-

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covered 2500 years ago, are still used in formal musical theorizing, but they no longer express what Pythagoras understood by them. In the 15th century of Western European music the growing elaboration of musical forms directed theorists to explore methods of tempering the pure Pythagorean scale to permit a greater variety of constant or nearly constant vertical relationships by intervals. The rules for these relationships established what is known as Formal Harmony.

The trouble is that the sum of the perfect intervals within an octave is slightly greater than a perfect octave by about a quarter-tone. Tempering consists in distributing the difference or *Pythagorean comma* among the intervals by tuning some intervals more narrowly.

Towards the end of the 16th century the extension of the new vertical harmonic relationships into music composed for instruments not of variable intonation, like voice and viol, but for the fixed intonation of the keyboard instruments caused further tempering. A new system of tempered intervals, called Meantone, came into predominance throughout European music. This intervallic system governed the harmonizing of European music for above 200 years.

In Meantone the principal major thirds of the scale are tuned acoustically pure or beatless; the other intervals are tuned somewhat impurely and unequally, with the result that every key in a Meantone tuning has a slightly different interval pattern or harmonic coloring. Modulation, or changing from one key to another, was of great importance because it changed the color and therefore in some degree the emotional nature of the music. A new musical grammar appeared, derived from vertical harmony and the new key system.

Modern harmonic theory is based partly on the simple mathematical relationships among perfect intervals established by Pythagoras, partly on the modulatory coloring among the imperfect intervals of the keys in Meantone tuning, and partly on rationalizations of these two conflicting systems in terms of the tuning we use today, Equal Temperament.

Equal Temperament solves or avoids the problem of the *Pythagorean comma* by dividing the octave into mathematically equal intervals, all equally imperfect and equally dissonant. Today we hear sung in Equal Temperament the choral music of the Middle Ages which was intended to be sung in acoustically pure intervals, the choral music of the polyphonic era which was intended to be sung in a nearly pure temperament called Just Intonation, and the music of the 17th and 18th centuries which was intended to be heard in the key coloration of Meantone. In Equal Temperament all these sound alike.

Not only do we hear all older music incorrectly; a more significant fact is that we hear no music which does not have a slight but equal quantity of dissonance in every interval that is played. Dissonance as a creative element in music came in with our present tuning. Relative degrees of dissonance emphasize the dramatic structure of our classical music, especially in the larger forms.

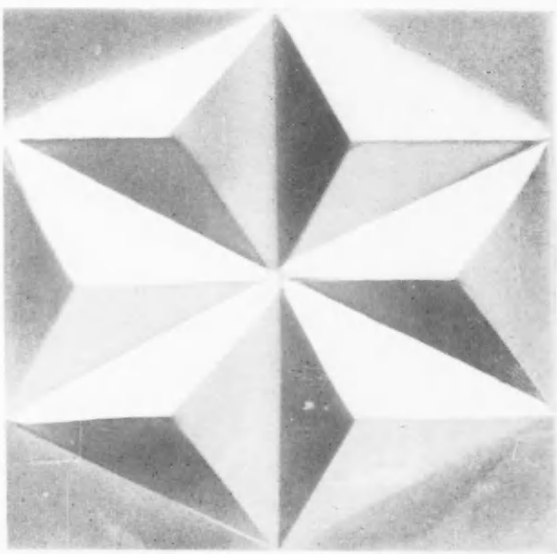
With Equal Temperament, all intervals being alike, the differences among the keys vanished; these differences continue to exist in theory, but no ear can hear them. A key can be recognized by its starting note but no longer by its distinctive coloration. To replace the vanished color, harmony was made thicker and heavier, until key harmony, too, disappeared, swallowed up in practice by a single chromatic harmony consisting of all the notes in the octave. Color had been restored to music at the cost of internal order. Harmony survived as a system of rationalizations without syntax or grammar. Dissonance lost dramatic relativity, since all music was now heavily dissonant. That is where music had arrived at the start of the 20th century.

Musical thinking today resembles scientific thinking at the time of Tycho and Galileo, when the intelligence was discovering by observation one set of facts while continuing to reason by scientific tradition since Ptolemy within another set of facts and was held by authority to accept a third set of facts not to be reasoned with or observed because revealed. And then space opened up dimensions no longer conceptual and verbal but real and inconceivable. The present-day recognition of Sound resembles that earlier discovery of Space.

Debussy exposed the theoretical impasse by dispensing with the traditional rules for harmony. Arnold Schoenberg resolved it by showing that since the relationships among the 12 chromatic tones remained valid in practice, a new single key of 12 tones

(Continued on page 30)

FOR MEN OF IMAGINATION ■ THE BEAUTY AND FLEXIBILITY OF POMONA'S SCULPTURED TILE AFFORDS ARCHITECTS AN OPPORTUNITY OF DESIGN EXPRESSION NEVER BEFORE AVAILABLE IN CERAMIC TILE. OFFERED IN SEVEN DESIGNS AND A WIDE ARRAY OF DECORATOR COLORS, SCULPTURED TILE IS TRULY A MATERIAL OF BOTH FUNCTION AND ART. SAMPLES AND COLORS AVAILABLE UPON REQUEST ■ POMONA TILE MANUFACTURING CO., LOS ANGELES 36, CALIFORNIA. OFFICES IN 26 PRINCIPAL CITIES. POMONA TILE



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BOOKS

ROBERT WETTERAU

GRAPHIS ANNUAL 1961/62, Edited by Walter Herdeg (Hasting House, Publishers, $15.00). The 10th anniversary issue of this Annual of International Advertising Art sets the same high standards as its predecessors—if anything, the best number to date. A proportionately larger collection of contributions from Americans should be heartening to graphic designers in this country, as the overall selections, from posters to packaging, booklets, advertisement and cards, merit high ratings. As usual the Swiss printing is meticulous, the whole most attractively set up. A preface by Professor Richard Guyatt of the Royal College of Art in London provides a thoughtful discussion of the dilemma of the fine arts artist in a rapidly moving technological age in opposition to the position of the designer and his performances in solving practical problems of communication.

BOOKS RECEIVED:

ARCHITECTURAL PRESENTATION IN OPAQUE WATERCOLOR by Chris Choate, (Reinhold Publishing Corporation, $12.50).

THE BOOK OF BOSTON, Federal Period by Marjorie Drake Ross with photographs by Samuel Chamberlain, (Hasting House, $4.50).

PHOTOGRAPHY AND ARCHITECTURE by Eric De Mare, (Frederick A. Praeger, $13.50).

VISUAL COMMUNICATION INTERNATIONAL, Frank Baker, Editor, (Hastings House, $6.95).

ILLUSTRATORS 61, The Annual of American Illustration, (Hastings House, $14.00).

A CHRISTMAS CAROL by Charles Dickens, illustrated by Ronald Searle, (World Publishing Company, $4.95).

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Curator, Contemporary Arts Center, Cincinnati

VISUAL DESIGN IN ACTION by Ladislav Sutnar; published by Hastings House, Inc., 151 East 50th St., New York 22; 188 pages, 36 pages of color portfolios, 342 black illustrations on Kromekote; $17.50.

Whenever one of the acknowledged leaders of a profession decides to write a book, it may ultimately become either a classic in its field or a textbook. Ladislav Sutnar's recent book, Visual Design in Action, will be both. It is an extremely handsome book that denotes perfection of design and production. This book differs from Sutnar's previous publications: "Design for Point of Sale," "Catalog Design Progress" and "Package Design: the force of visual selling," all of which have become basic tools for the graphic designer and art director. In these books, Sutnar's editorial comment was illustrated with the work of numerous designers. In Visual Design in Action Sutnar has restricted himself to his own work. (Sutnar is one of the very few men in any profession who can examine his personal achievements with this degree of objectivity.)

Visual Design in Action typifies Sutnar's individual talents which include: the ability to organize ideas into dynamic visual patterns, an uncompromising facility to achieve maximum precision in methods of printing production, and a unique quality for describing his philosophical ideas with absolute clarity. This book verifies Sutnar's peerage as one of the international leaders in the field of graphic design because it demonstrates that he can practice what he preaches.

Ladislav Sutnar was born and educated in Czechoslovakia; he came to the United States in 1939 as chief designer of Czech participation in the New York World's Fair. Although Sutnar had been developing new ideas and principles of design in Czechoslovakia, his residence in this country intensified his awareness of new problems which became more evident here. In the United States it was possible to find practical examples of the directions toward which 20th century industrial life was moving. At the same time, it was possible for the designer to assume areas of responsibility in his work rather than to theorize upon them. In all phases of the American highly industrialized environment, everything moved more rapidly; it was necessary to make more decisions more rapidly. The increased differentiation of communication techniques and the increased number of competitive factors created chaos and confusion. Ladislav Sutnar accepted the 20th century environment along with its problems and potentialities. In this book, Sutnar has demonstrated clearly that his philosophy can provide a structure upon which to develop better solutions to existing and future problems.

The following statement from the first section of the book—principles and attributes—defines Sutnar's position with simplicity and clarity. "New graphic design rests on the belief that sound principles and educated thinking should replace obedience to supposedly safe rules. It is never mechanical, but imaginative, and by pointing to the future in an age of conformity, inspires improvement and progress.—Every design solution is the result of objective thinking that determines a harmonious balance between usefulness (the appeal to the mind) and appearance (the gratification of the eye). Every sound design solution satisfies the three design principles of function, flow and form. Such a new design entity also serves to intensify comprehension.—The performance standards to meet the requirements for functional information flow for fast perception are (1) to provide visual interest to gain attention and start the eye moving, (2) to simplify visual representation and organization for speed in reading and understanding, and (3) to provide visual continuity for clarity in sequence. The relative importance of each of these standards will vary considerably from case to case."

Despite the highly personal nature of this book which may bring criticism from some quarters, the scope of its subjects is universal and covers all major facets of communication design today. In the section concerned with "US information design progress," thirty six individual subjects are discussed. Among them are some of the following: "strength in visual unity: the new concept of the corporate image," "industrial information system design," "point-of-sale design for prestige," and "visual direction and identification systems in building interiors." Within each one of these headings, Sutnar discusses the problems that

(Continued on page 33)

notes

in passing

Cultural fragmentization is perhaps one of the most serious aspects of the malaise of our times for it stems from the barriers in thought and feeling which isolate us one from the other. . . .

There are obvious schisms, deep and penetrating, in the cultural sphere. In art we have the same experience of cultured and intelligent art lovers at each other's throats in baffled animosity. . . . There would appear to be a total lack of understanding which is terribly frustrating to the protagonists: and the keynote of all criticism today is anger arising out of frustration.

Particularly do we see this in architecture. Architecture is an admirable case study of cultural disintegration for it is a mirror which reveals the characteristic of an age in clear, sharp light. "In the state of building at any period," Lewis Mumford wrote, "one may discover in legible script the complicated processes and changes that are taking place within civilization itself." Architecture is the mirror of the age and if the picture of civilization which it reflects is confused and diverse, perhaps it is partly because architecture itself is multi-faced. Many indeed are the faces of architecture.

We are plagued by a plethora of coined labels. We are confused by an infinity of isms; and while we are aware that this is partly mere journalistic cleverness, yet we must concede that modern architecture has and is exfoliating — or perhaps disintegrating — into those diverse manifestations which we compartmentalize as functionalism, futurism, constructivism, romanticism, eclecticism, empiricism, brutalism, even bowellism. This is the pack of cards, with such intricate combinations as neolibertism or compositional rigorism, with which we play the game of building today.

For a decade or more we have seen the finest of Italian architects, the most articulate of Italian critics, expending their energies in a polemical battle between the rationalists and the organicists. For a decade or more we have seen Italian architects, as Gardner-Medwin has pointed out, abandoning the disciplines of functionalism and seeking personal solutions of facade and form, giving to architectural expression the arbitrariness and ephemerality of the world of fashion. Consequently, it is in Italy that we find the poles of architectural extremism separating out.

If it is in England that the theories of diversification are most determinedly pursued, if it is in Italy that the pioneering of architectural diversification emerges, then it is in the United States—perhaps because of the extensive scale of building operations—that the massive consolidation of architectural chaos has taken place. Any survey of current American work shows no single manifestation of a contemporary architecture, but representative buildings of every current architectural attitude and fashion accumulating in a diversity which astounds us.

Architectural individualism runs rampant. In addition to the innumerable major movements, . . . 'minor private disciplines and personal dogma under the broad umbrella of beautiful aspirations are as numerous as ever. . . . The disciplines are all more or less expedient, all more or less individual, sophisticated techniques for reaching up to—to what? . . . The intellectual rat race is faster now. Everyone would like to be a one-man *avant-garde* . . .?' Reaching up to what?, asks Boyd, and this is the great architectural enigma of our age, underlining in specific terms Albert Einstein's aphorism that 'perfection of tools and confusion of aims are characteristic of our times.'

It has been cogently argued by G. M. Kallman that it is this obscuring of long distance aims which has deviated a generation of younger architects from the pursuit of ultimate objectives to the solution of immediate problems. Action replaces vision for the generation of angry young architects. Perhaps blind action is characteristic for the angry young men appear often to be rebels against, rather than protagonists for, some ideal, aim or objective. They are angry, and with reason, against parents, teachers, and any adult in authority who is collectively responsible for the mess the world finds itself in. They are angry against the squares (and tee-squares) of the older generation, and unless they can become rebels with a cause they will degenerate into architectural delinquency.

The phrase *young men* is misleading, for anger implies an attitude which affects men of all ages. Hence we have Philip Johnson, an architect mature in age and experience, expressing the restlessness of the times. He says, in an interview with *Time* magazine, that 'we are rebelling . . . but we have picked different ways to rebel against the modern movement . . . architecture is moving not in one direction but many. The result may be chaos but there could also be more excitement.' Johnson rationalizes and romanticizes this implied lack of direction, and becomes a powerful champion of the new *laissez-faire*. 'But once more whither away? The international style is dying and the *Architectural Review* is looking for a new compelling unifying slogan. But if we live in an age when we do not like "compelling slogans," or styles, or disciplines, or even capital letters, can't we just wander around aimlessly? "The world is so full of a number of things": and so forth. I am free to admit that I love in my work to comment on history. The Italians like funny

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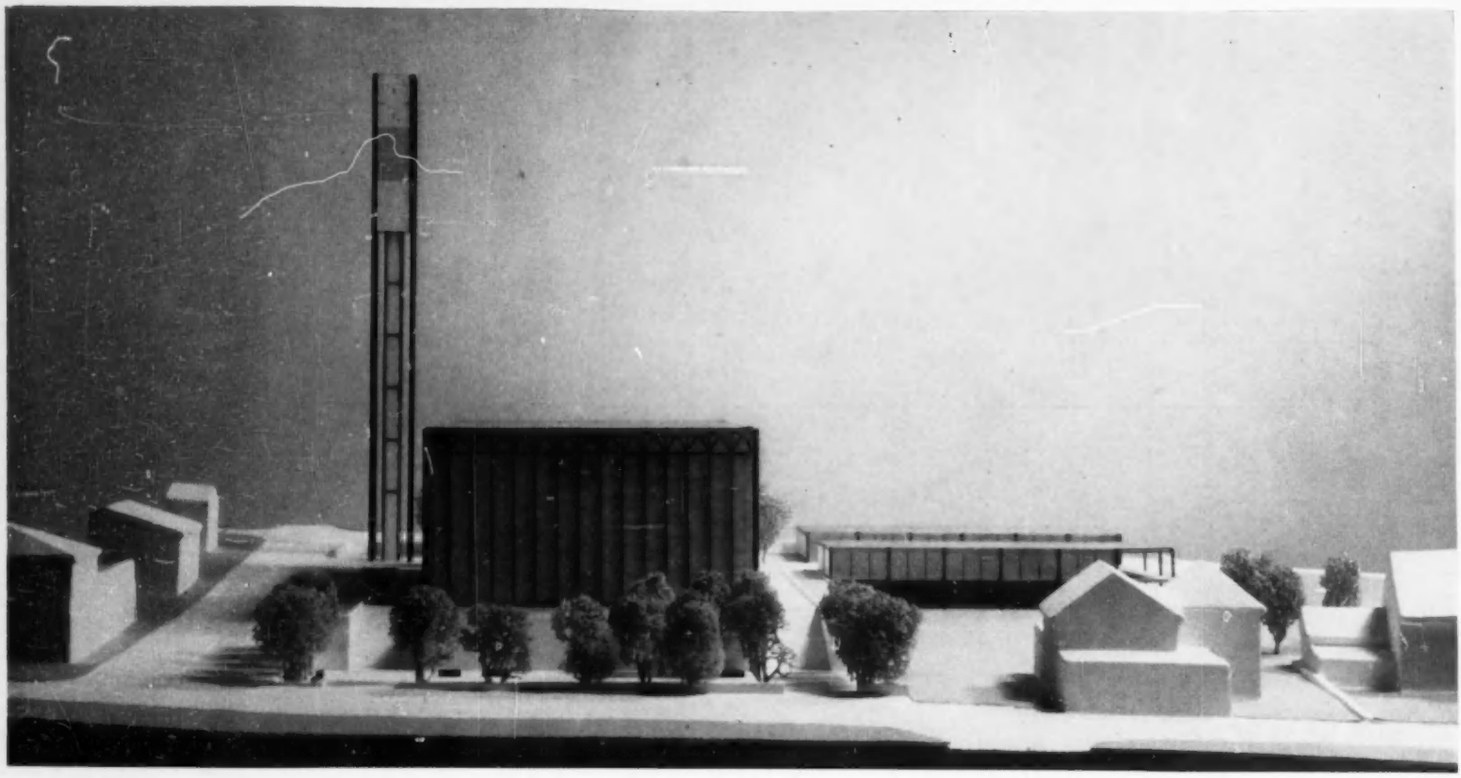
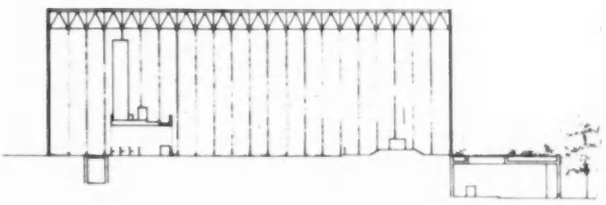
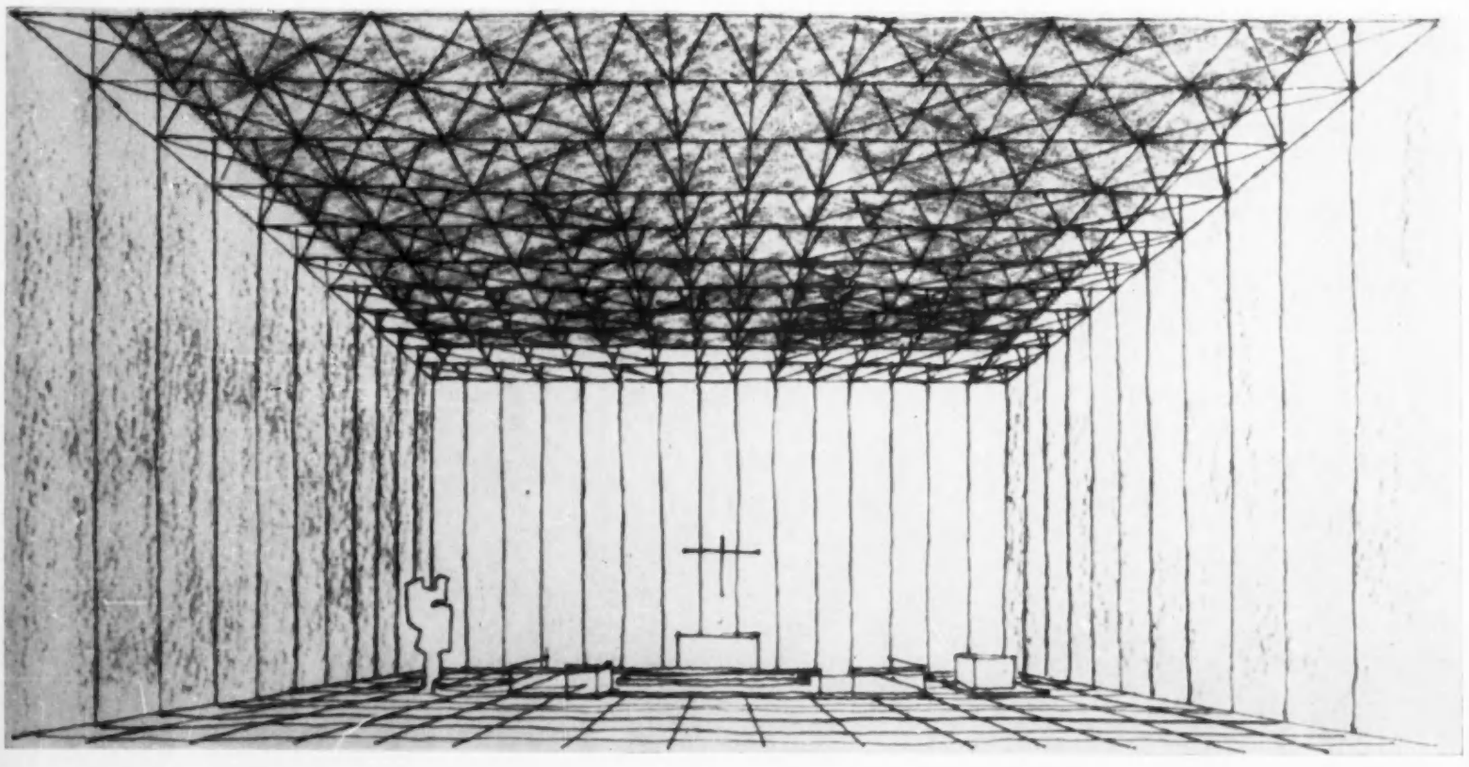
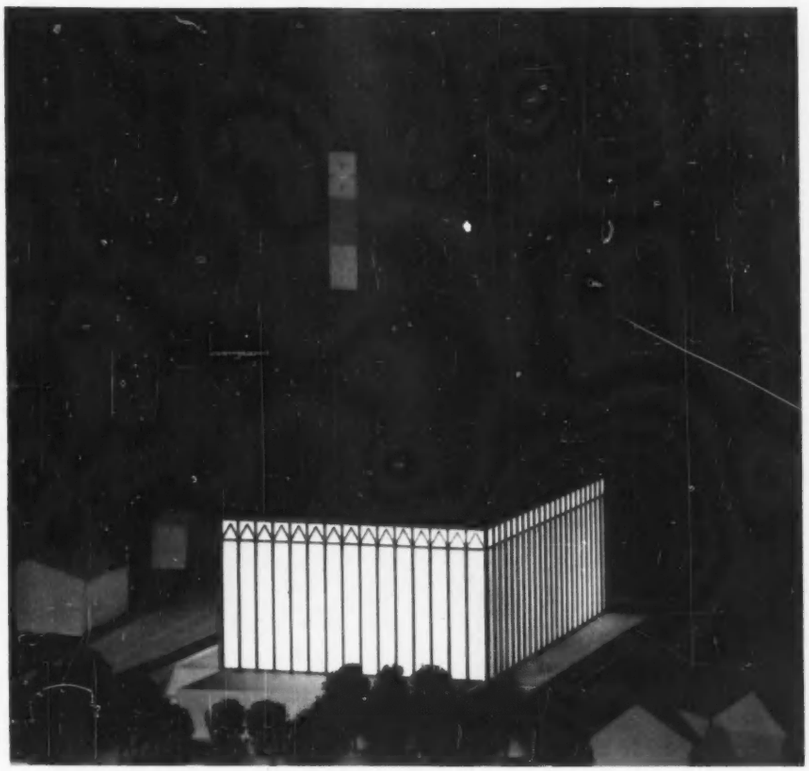
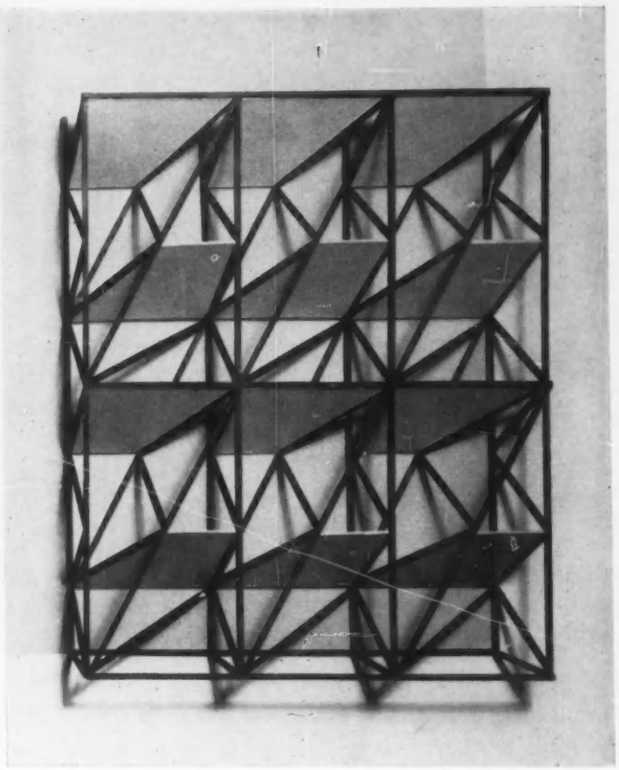


SMALL CHURCH BY FRANZ FUEG, ARCHITECT

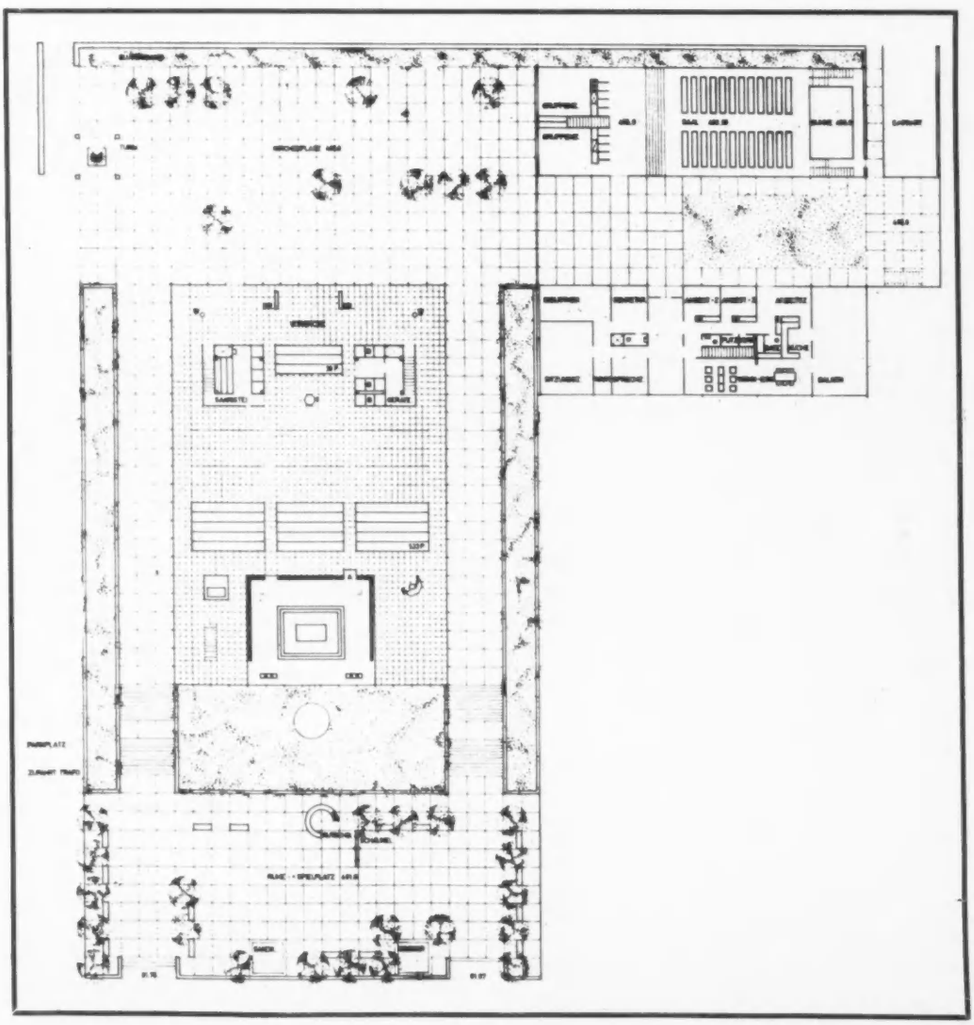








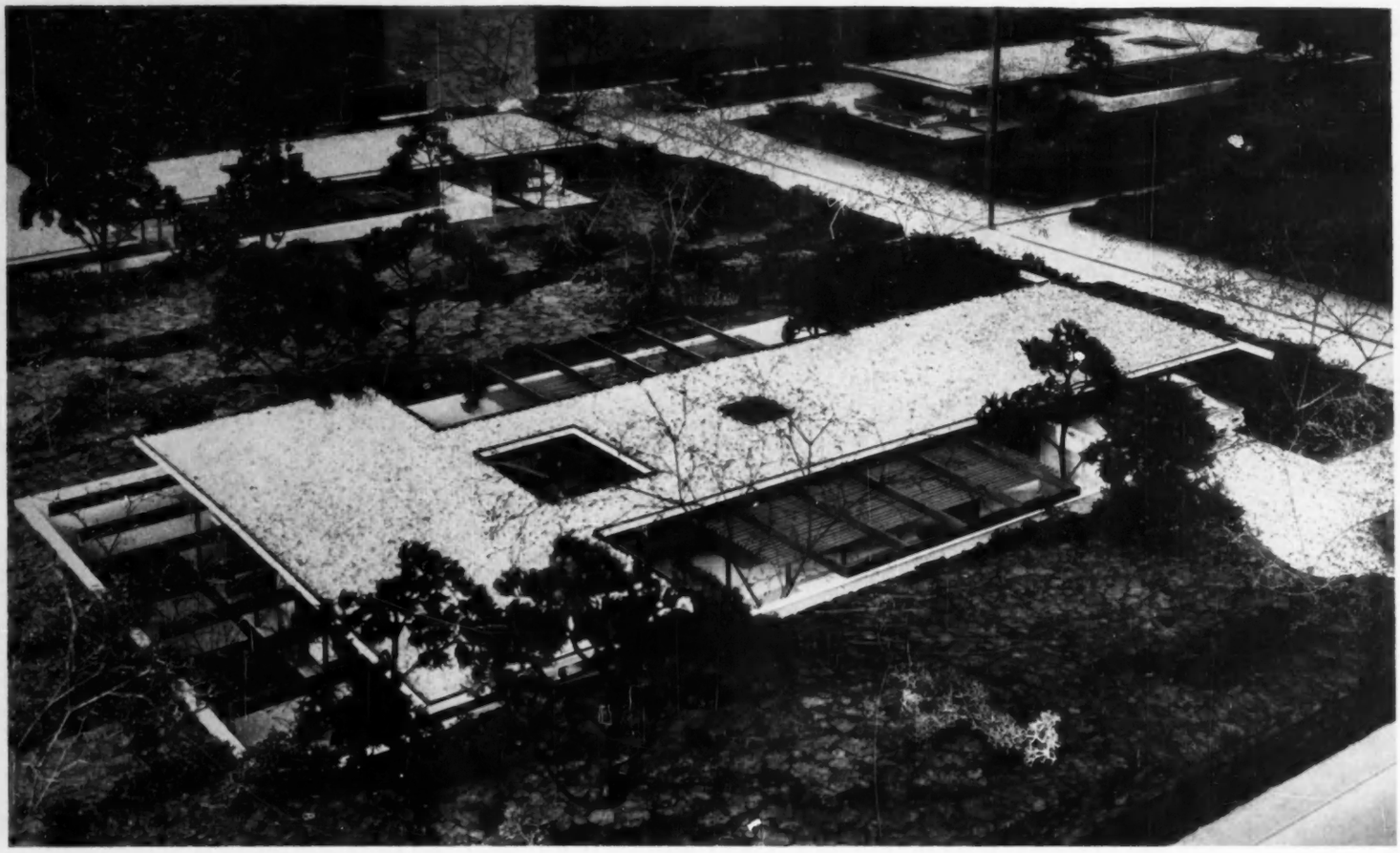
PHOTOGRAPHS BY ERNST RASS



The outside walls of this small church in Switzerland are translucid walls, consisting of onyx panels set at intervals and which filter the light, giving it a peculiar mellow quality. Early in the morning and in the evening, the nave will be illuminated by lights fixed behind the acoustic panels in the ceiling. At night, the church will shine above the village like an illuminated ship.

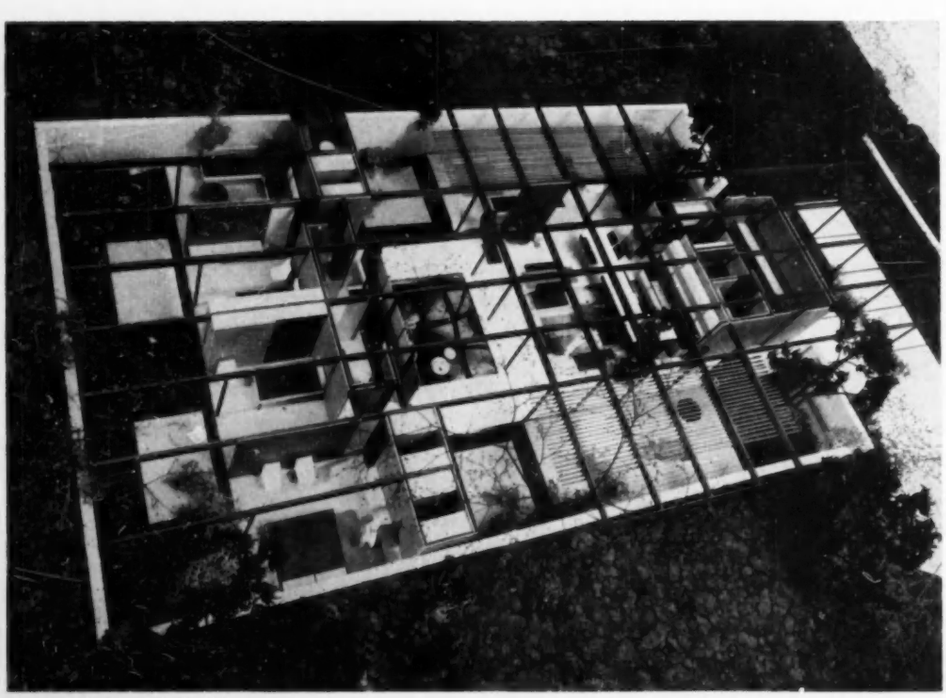
Apart from the gallery and walls below, there are no structural elements in the interior of the church. A 1.75 meter-high surface-bearing structure, supported only over the elevations, spans the pillarless space. This bearing structure consists of 2,950 rods, each 6.5 centimeters thick, and has 1,000 system points. The individual fields are asymmetrical but form a distinct axis in the longitudinal direction of the church. The standard symmetrical disposition of the fields would have been considerably less economical, requiring additional rods (longitudinal and lateral bonds) for peripheral stabilization.

After the elevation supports have been set in position, the bearing structure will be assembled at the building site, welded, sand-blasted and sprayed; light fittings installed, and the acoustic panels fixed between the rods. The bearing structure will then be raised to the correct height by means of slablifts.



ARTS & ARCHITECTURE'S CASE STUDY HOUSE NO. 24

ARCHITECTS: A. QUINCY JONES—FREDERICK E. EMMONS, AND ASSOCIATES
DEVELOPER: EICHLER HOMES, INC.
CO-SPONSOR: THE PRODUCERS' COUNCIL, INC.



PHOTOGRAPHS BY LELAND Y. LEE

With the introduction of an earth backfilled retaining wall as the basis for a design concept, Case Study House No. 24 suggests a solution to the interrelated problems which result from today's commitment to mass-produced housing in newly planned communities.

The following four functions are basic to the design concept and develop from placement of the house within the earth retaining wall:

1. Visual integration of house to adjacent housing and terrain.
2. Sound privacy from neighbors and traffic noise.
3. Visual privacy from neighbors and street traffic.
4. Thermal insulation adequate for both heating and cooling.

Site integration: What usually constitutes a costly disadvantage to the builder, raw land that is not completely level, becomes a design advantage when the over-all site plan includes a number of houses developed on the basic concept of the Case Study House. Although a flat site is usually preferred by a builder who is controlling costs carefully, this type of design approach provides that

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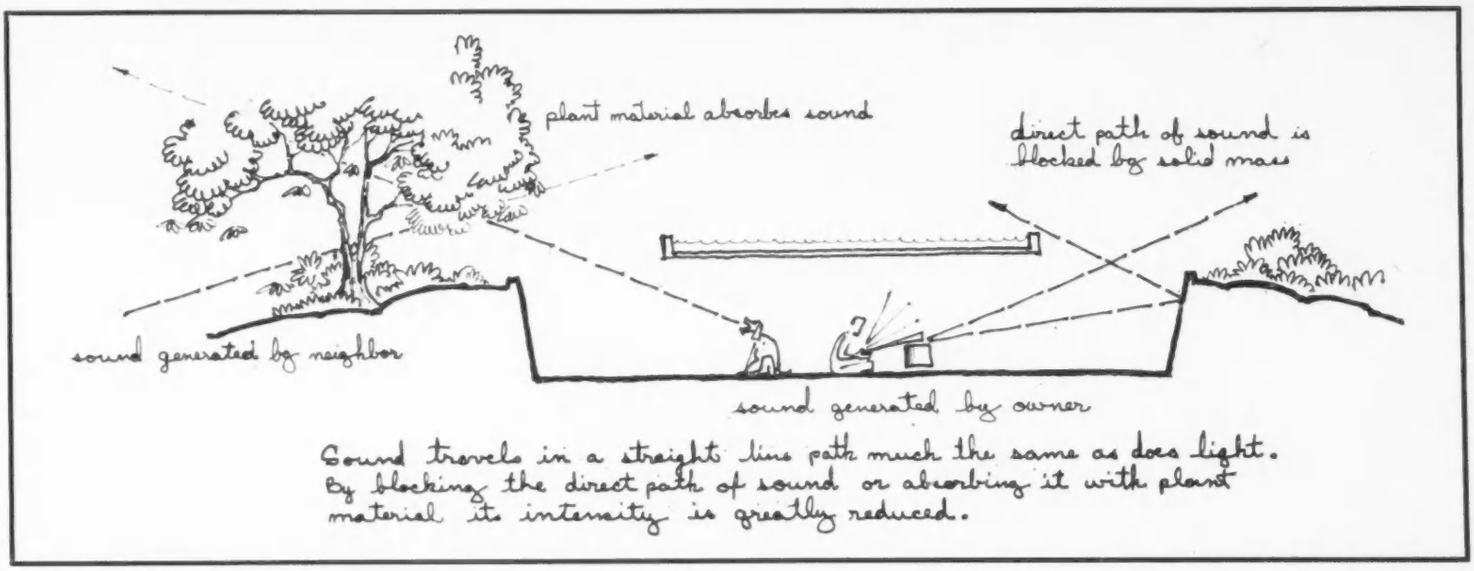
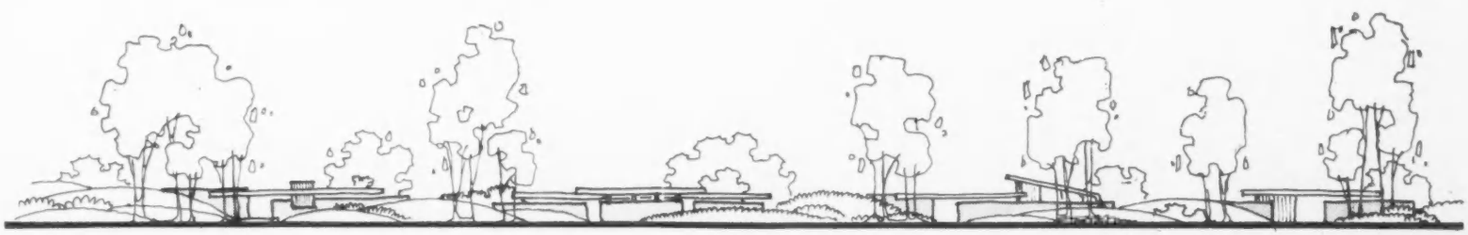
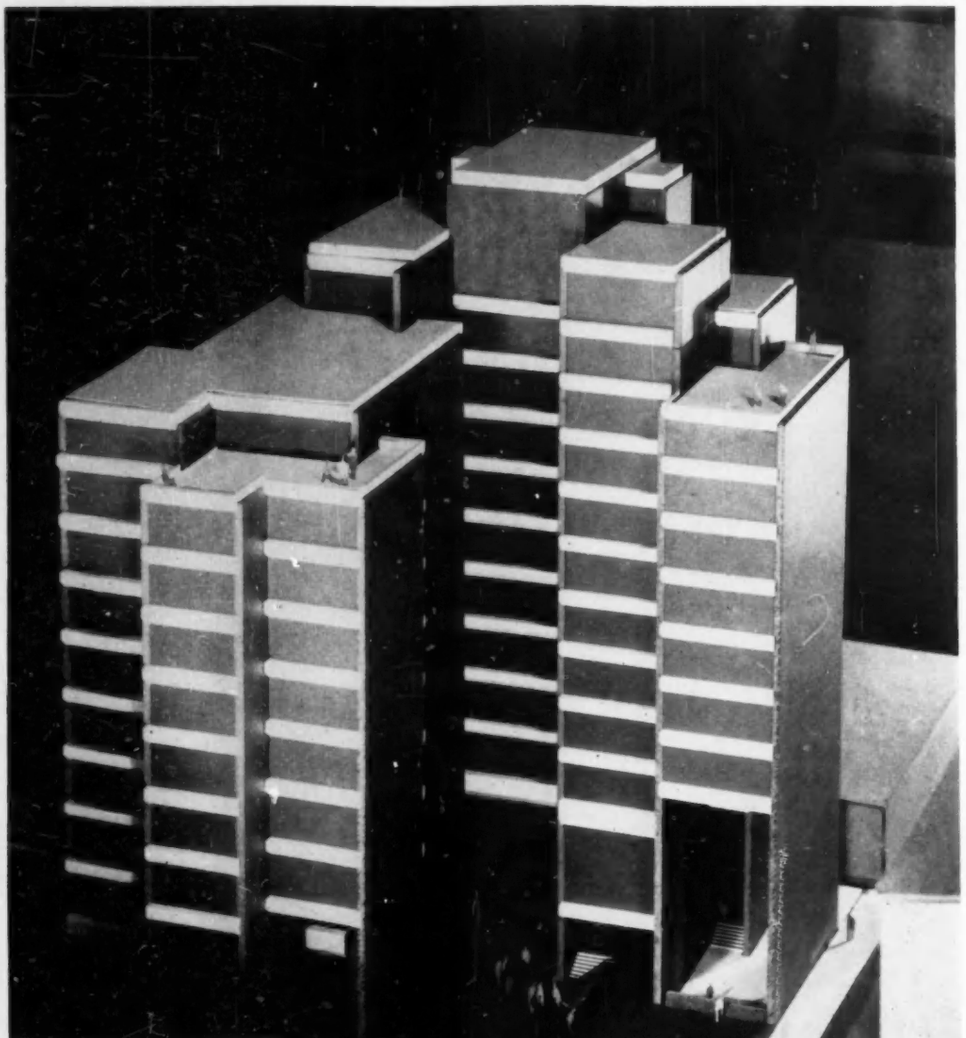

plant material absorbs sound
direct path of sound is blocked by solid mass
sound generated by neighbor
sound generated by owner

Sound travels in a straight line path much the same as does light. By blocking the direct path of sound or absorbing it with plant material its intensity is greatly reduced.

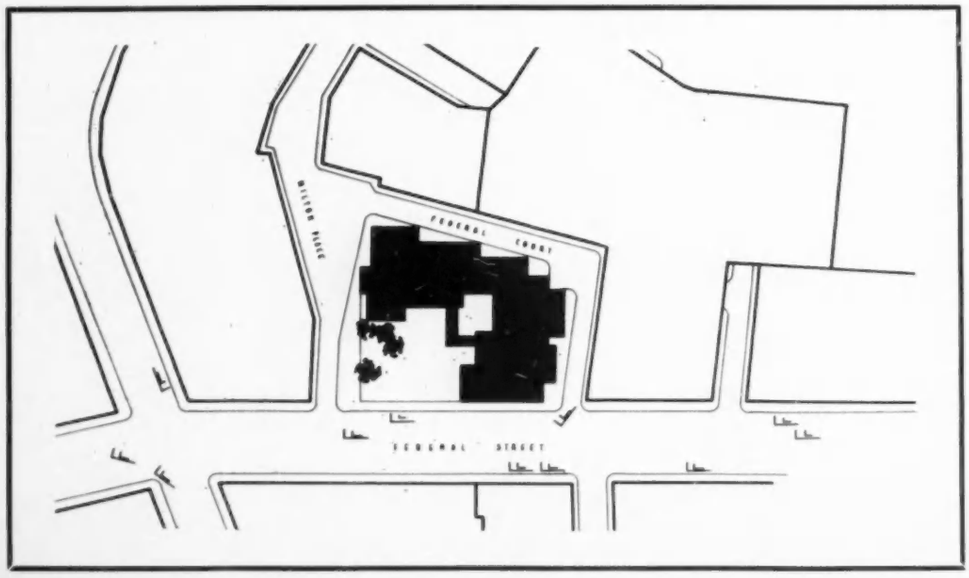


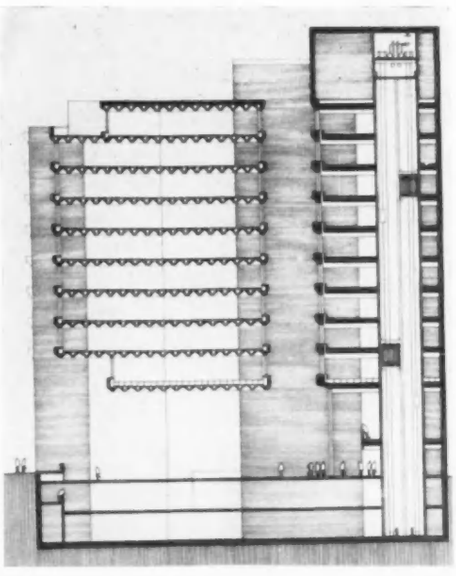


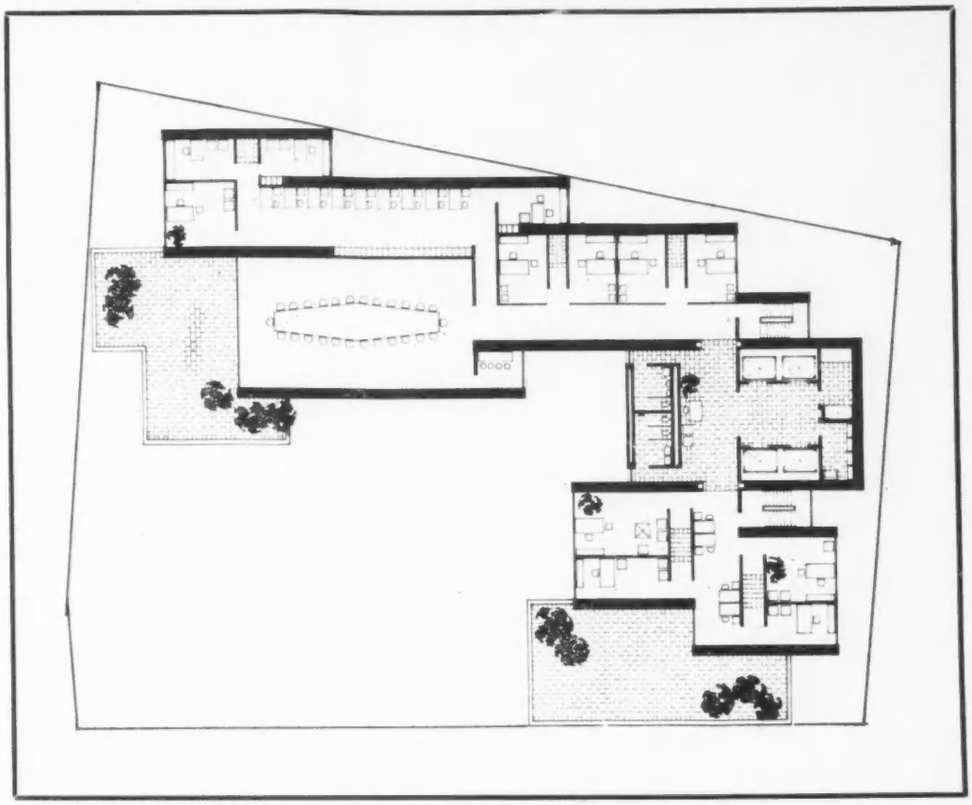
PROJECT FOR AN OFFICE BUILDING

STANLEY TIGERMAN, ARCHITECT

The major generating factor in the design of this project was to challenge the universal space concept of what has contemporarily been accepted as an archetype for office buildings. Investigation of the problem revealed that white collar workers do not operate efficiently as a large group and that the corporate idea of efficiency is to break up a large office force into working units of between eight and twelve people supervised at that level. Therefore, it appeared reasonable to attenuate the form based on this need while still allowing inter-department as well as intra-department flexibility. The resulting design of a bearing wall structure broken into several spaces for single tenant occupancy accomplished this aim. The acceptable office building solution of movable partitions never really defines space with a resulting ephemeral lack of definition of space. This design relies heavily on the use of solid masonry



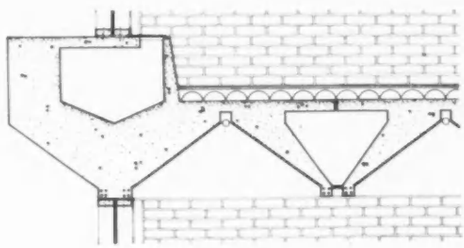


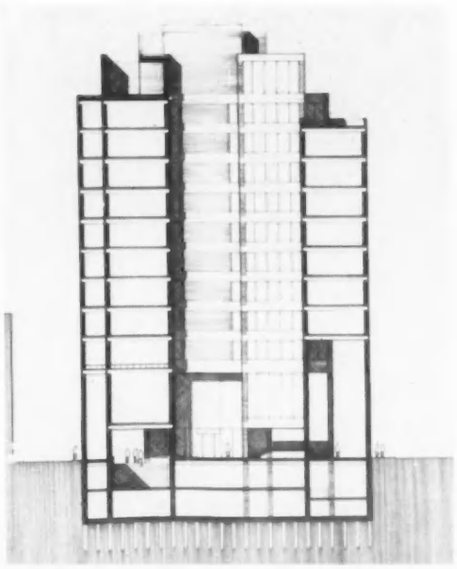


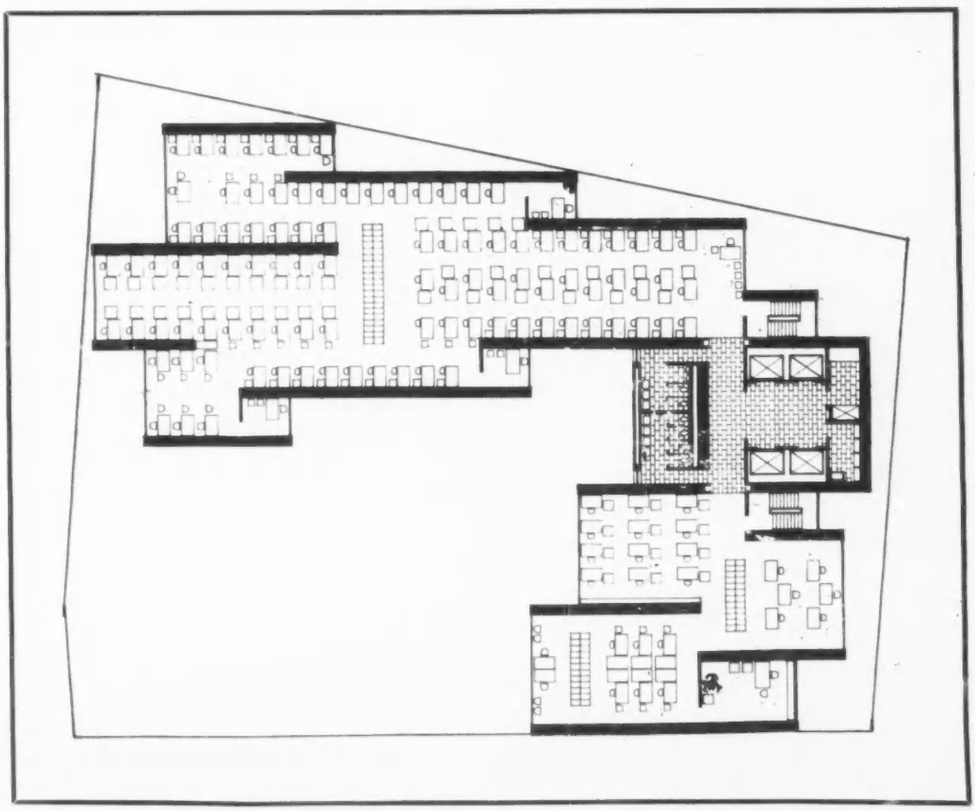
walls and glass to give a solid spatial termination to the flexible spaces on any given typical floor.

The structure is of three-directional reinforced masonry bearing walls with one way pre-cast, pre-stressed concrete sections spanning between the walls and so designed to accomplish high velocity ducting of air intermittently with exposed, low brightness fluorescent tubes. A mechanical down-feed system runs through the walls and across these pre-cast members mechanically ventilating, air-conditioning the typical floors.

The cafeteria is also broken down into a series of small spaces reflecting the sense of privacy now lacking in current oversized cafeterias. Access to the building from the street has been carefully considered to accomplish a meaningful sequence of spaces culminating in the large vertical shaft of light immediately preceding the entrance lobby and core.







THE INFLUENCE OF REINFORCED CONCRETE AND TECHNICAL AND SCIENTIFIC PROGRESS ON THE ARCHITECTURE OF TODAY AND TOMORROW

PIER LUIGI NERVI

In the last fifty years the slow, age-long evolution of the art of building has undergone a sudden change, which has given us, in the space of a few decades, buildings and other structures which bear no resemblance to anything previously created by mankind. This is a remarkable phenomenon and its causes, the way it has been produced, its foreseeable future developments deserve to be examined as closely as possible.

It would be superfluous, and especially in this place, to demonstrate how large a part architecture plays in the life of human society, but it will be useful to remember that all the qualities of a people and of a period are concentrated and, as it were, fossilized in its architecture. For everyone contributes to architecture: the client, with the exact definition of his requirements and with the choice of designer; the architect in the function of interpreter, or rather catalyst, of the deep and sometimes unconscious feelings of the society in which he lives; the general public, which judges a work of architecture with the immediacy which comes from the very fact of living in it or beside it and, by its verdict, influences succeeding developments in building.

While attempting to correlate the causes which, in less than a century, have produced such a profound transformation in the art of building, it would, I think, be well to bear in mind the two-fold character of a work of architecture: it has a physical existence, dependent on materials and technical necessity, and an emotional content in which dimensions and materials play little part and which becomes more difficult to define the nearer the building is to be domain of art.

In a certain sense these two elements can be considered to correspond to language, either written or spoken, and to the poetic moods and thoughts which it may express. The vocabulary of the language of architecture is made up not only of building materials but also, and more decisively, of structural types and functional demands which the work must satisfy.

We have only to make a very short comparison between the past (that is to say all building from prehistoric times to halfway through the last century) and the world of building today, together with what is foreseeable of that of tomorrow, to realize what a radical change has come about in building techniques and materials. As a result of the irresistible pressure of economic factors and of the rapid evolution of industrial production, acting in a chain of causes and results whose point of departure is very hard to determine or explain, stone, bricks and timber have come to be supplemented, if not largely replaced, by steel, concrete, light alloys and plastics.

All the same, however unmistakable the architectural difference may be between a cast-iron column and a corresponding marble column, or between a facade with a steel frame and aluminum panels and one in brick, it is easy to see that the most complete transformation in architectural language and thought has been brought about by the new and daring structural forms made possible by the application of structural analysis and constructional techniques, which may be called Building Science.

We have, all of us here, made Building Science the foundation of our studies and we accept it, not only as a sure guide, but almost as implied by the very existence of designing and building. But when we reflect that this system of theory was born about a hundred years ago and that, until then, every work of architecture, even the Gothic cathedrals, the great domes, the great masonry bridges and the vaults of the great galleries of the Renaissance palaces, were designed, proportioned and built by virtue of intuition and experience, apart from feeling unlimited admiration for the courage and intellectual acuteness of those distant predecessors of ours, we see in a clearer light how radically the conditions of building today differ from those of every century before our own. Restriction to a few simple structural forms, which bit by bit architects of genius had discovered and which, though slowly changing, remained valid for tens and even hundreds of years until a new breath of genius permitted the rise of new forms, has given way, thanks of Building Science, to the possibility of allowing the imagination a free run and of thinking out new structural forms, of testing the conditions of internal equilibrium and of deciding, with more than the necessary precision, the dimensions required to resist stress.

Finally one must take into account the violent intervention of economic limits and considerations in the whole vast field of building. It is certainly hard for us to estimate the economic conditions of building in the past, but it is clear that for the grandiose palaces of the powerful, and even more for the great churches and for the most representative buildings, the cost of the work must have had limits and conditions of expenditure very different from those of today. Today cheapness, or rather the economic return of building activity, is of fundamental importance for the balance and social development of nations. It is the strict duty of every architect to study economical building; one has only to remember that if building costs could be reduced by an appreciable fraction and if, as a result, at an equal total cost the numbers or the size of buildings could be increased by that much, many of the problems which embarrass the less fortunate nations would be considerably eased.

To this consideration, in itself already more than sufficient to justify the revolutionary changes of the last hundred years in the vocabulary of the architectural language, have been added the new demands arising from the progressive technical and social developments of our times. The use of new and increasingly efficient materials and the possibility of qualitative and quantitative tests devised by Building Science have made possible the realization in vital and expressive architecture of the unprecedented structural forms demanded by railway stations, airports, seaports, enormous bridges, very high buildings and huge factories. It was therefore inevitable that this combination of factors should lead to the complete transformation in the exterior aspects of a great many modern works of architecture, so much so that, in the light of these elementary observations, the dispute which developed in the first decades of this century between the upholders of the old forms, grouped in Italy in the so-called 'arch and column architecture', and the champions of a new architecture, grouped in various tendencies such as futurism and functionalism, seems now quite pointless.

The radical transformation in the vocabulary of architecture had already taken place under the pressure of technical and economic factors, before the emergence of the new tendencies in the field of architectural expression, so that it is more than permissible to wonder whether these tendencies are not its result rather than its origin. The fact remains that the architectural experiments of Sant'Elia, a typical exponent of Italian futurism, seem to us completely out of date and more like fantastic baroque than sincere contemporary architecture equally suitable for the future, while on the other hand some of the great iron bridges, the Eiffel Tower and the famous Machinery Pavilion of the 1889 Paris Exhibition,

may be considered eloquent prototypes not only for the architecture of today but even for that of the future, although designed in a period of formal decadence.

And besides, the impossibility of halting or reversing this already apparent trend was clearly demonstrated when Facism and Nazism, turning to the past and employing useless columns, a profusion of marble and porticos and entrance halls of gigantic proportions, tried to produce the appearance and signs of an illusory power. Looking back today on such works, at a distance of not even twenty years, we feel disgust because their empty rhetoric fossilizes the moral poverty and falseness of the ideas which inspired them.

The richness in form of architecture's new vocabulary increases every day, not only because of the increase in the number and variety of the building materials made available by the manufacturing industries, but more important, because of progress in building methods.

To take reinforced concrete structures as an example, it is easy to see how, from their beginnings up to the present day, as a result of perfected building procedures, their appearance and architectural possibilities have radically changed. At first reinforced concrete was considered purely from the technical point of view. Once it had fulfilled the structural function entrusted to it, it was hurriedly covered up with masonry and marble facings; it was accepted as a brutal necessity, but to be hidden as soon as it had served its purpose.

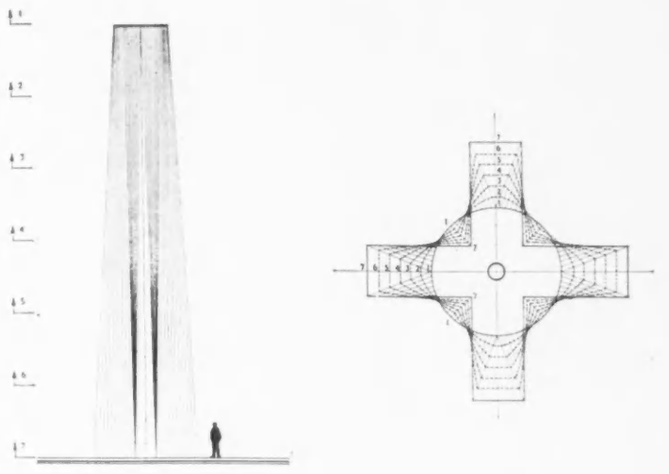
If, at the start of the century, someone had wanted to put up exposed concrete walls like those of the exterior of the UNESCO conference building in Paris, apart from the hostility to the acceptance of such a revolutionary conception which would have been encountered at that time on all sides (from clients, local authorities and public opinion), he would have found it even harder to overcome the many small difficulties of execution, whose resolution one by one in the continual refinement of building technique has allowed us to obtain a satisfactory result today.

It must not be imagined that it is at all easy to obtain a mix giving an interesting surface that is regular but not uniform, or that it depends entirely on the designer's wishing to obtain it or, in other words, on a desire which contributes to the aesthetic and cultural side of architecture. Every detail contributes to and is necessary to a good result: the exact preparation of the frame of the formwork, the quality of the timber in contact with the mix, the oil with which the timber is coated to prevent the mix from sticking, the quality of the mix, special attention to the compaction or vibration, the sort of distance pieces needed to hold the reinforcement far enough from the exterior surfaces of the concrete and to prevent its coming to the surface with the resulting rust stains, careful programming of casting to avoid, as far as possible, double lifts which always cause irregular stains, the division of the stages of casting exactly by means of little corrugations and, finally, a special executive capacity or, more precisely, a good understanding on the part of the directors and operatives of the building firm of the importance of all these little details.

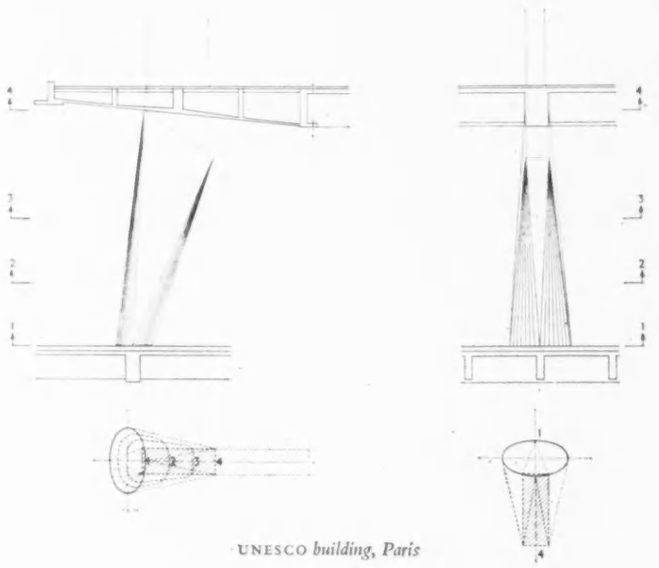
It is clear that problems of this kind could not arise of themselves, or be put forward, until after the new system's first period of application during which the designers, scientists and builders were intent on defining its structural, practical and economic possibilities and on exploring the field in which they might be applied.

Indeed it is perhaps worth noting that even today the importance of these technical factors is not sufficiently understood or taken into consideration by designers and builders, which is why one sees good projects lose a large part of their expressive force through deficient

(Continued on page 28)

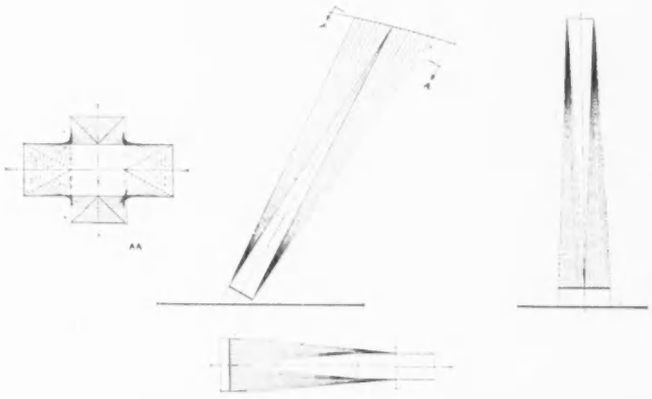


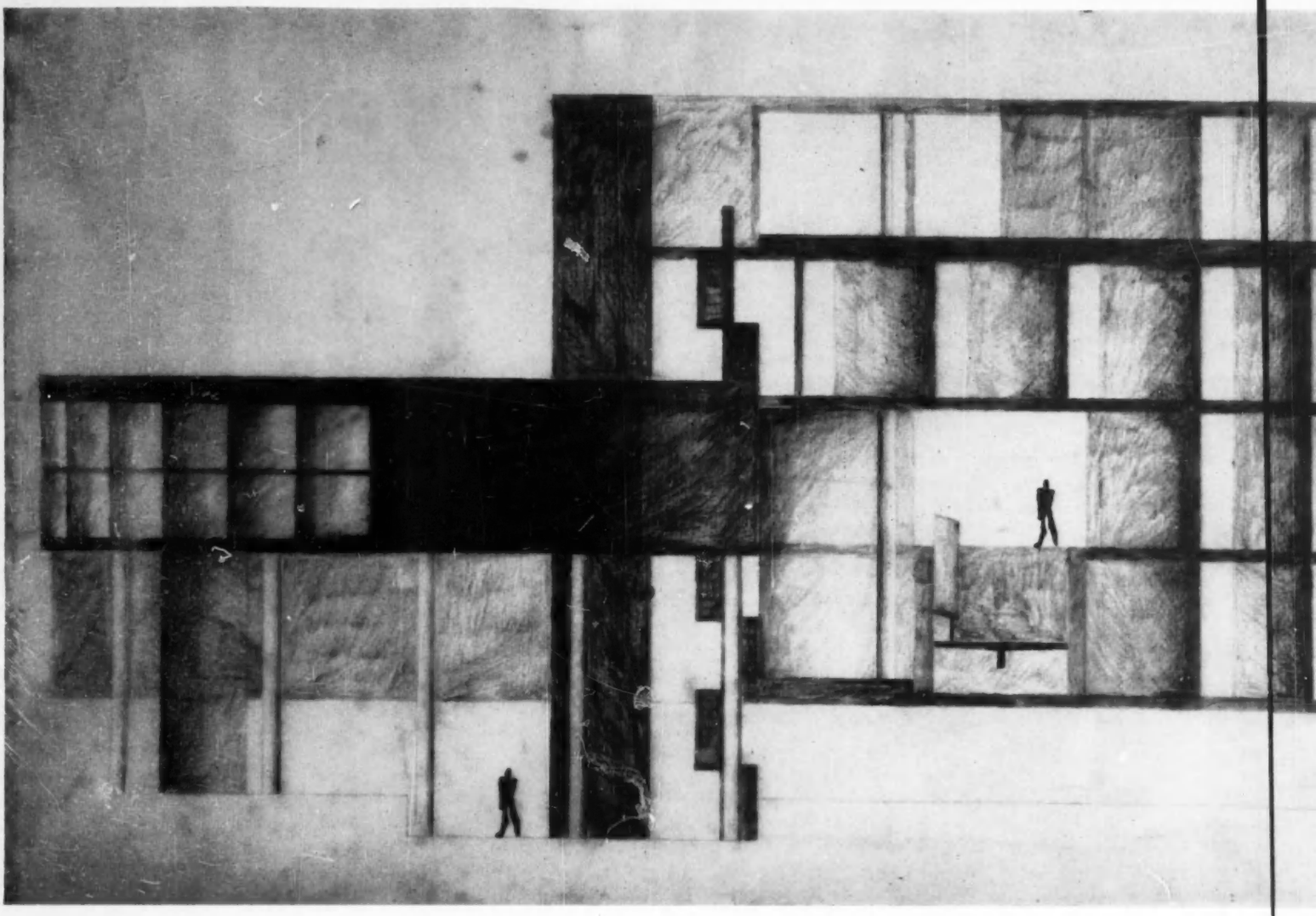
Palazzo del Lavoro, Turin



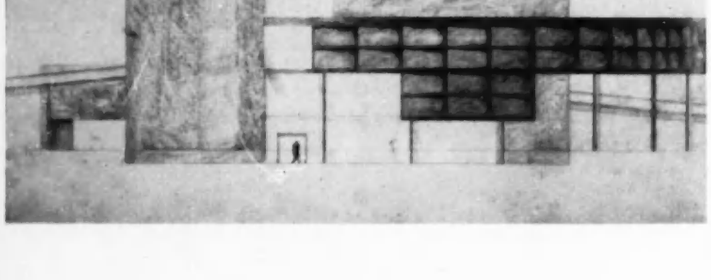
UNESCO *building, Paris*

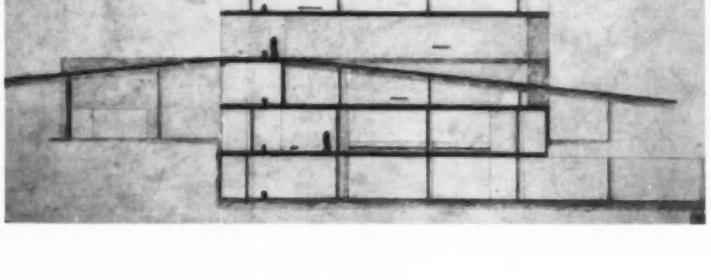
EUR *Sports Palace, Rome*

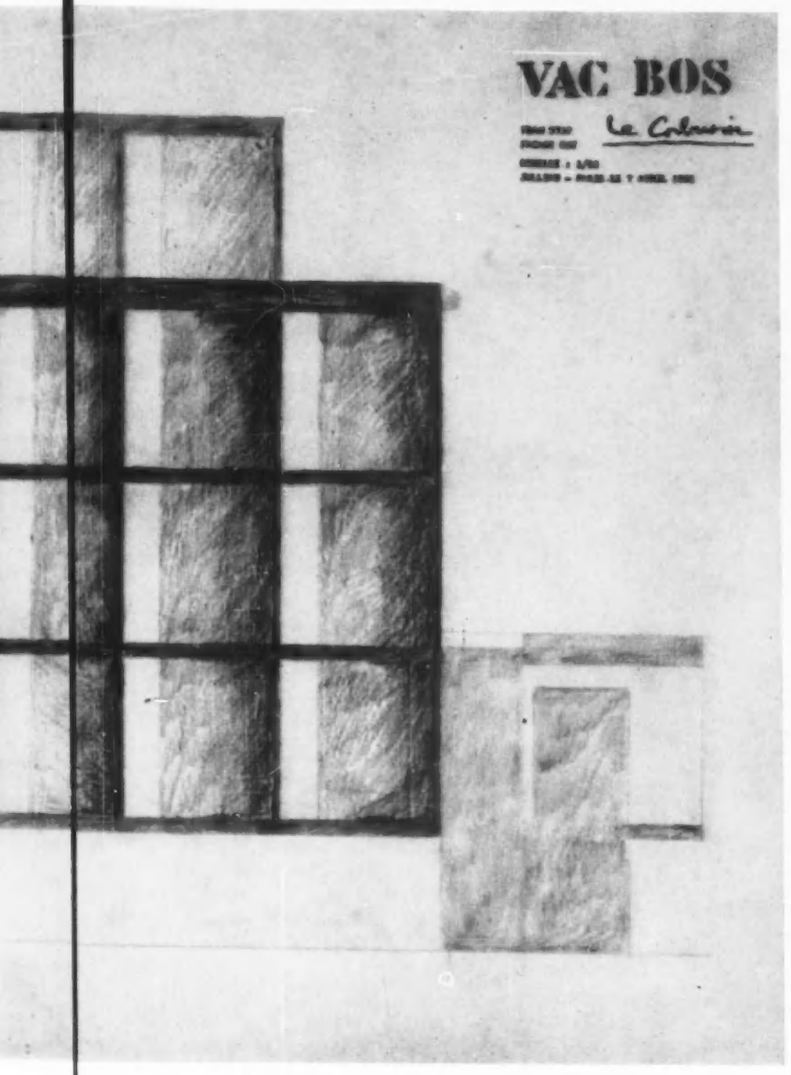




LE CORBUSIER: VISUAL ARTS CENTER–HARVARD UNIVERSITY







The new Harvard University Visual Arts Center is scheduled to open in the fall of 1962. The structure will house, in open flexible space, a number of design workshops where undergraduates and advanced students will work in a variety of media and structural materials and where they will experiment with various aspects of line, form, colors, texture, light and communication.

The architect's design involves a five-level building of approximately 50,000 square feet. Each level is designed as an open space that can be subdivided by movable partitions or cabinets. The walls make use of deep sun baffles that change according to the orientation of the facade and control the natural lighting of the interiors. Large rooms open to roof terraces which will provide outdoor exhibition spaces. The building is carefully planned for cross-ventilation, making air conditioning unnecessary except in the lecture hall and special basement workshops.

The workshops of the Center are separated into three areas: a two-dimensional workshop (drawing and painting); a three-dimensional workshop; and a workshop devoted to "light and communication" (photography, motion picture, sound, etc.).

The Light and Communication workshop will be situated underground with studios and a high ceilinged lecture hall seating 180 students.

The two-dimensional and three-dimensional workshops will be located on the second and third floors in a variety of studio arrangements with nearby shops for work in metal, wood, ceramics, and other materials. A pedestrian ramp connecting the two streets on each side of the building will pass through a planted terrace in the center of the building at the third level.

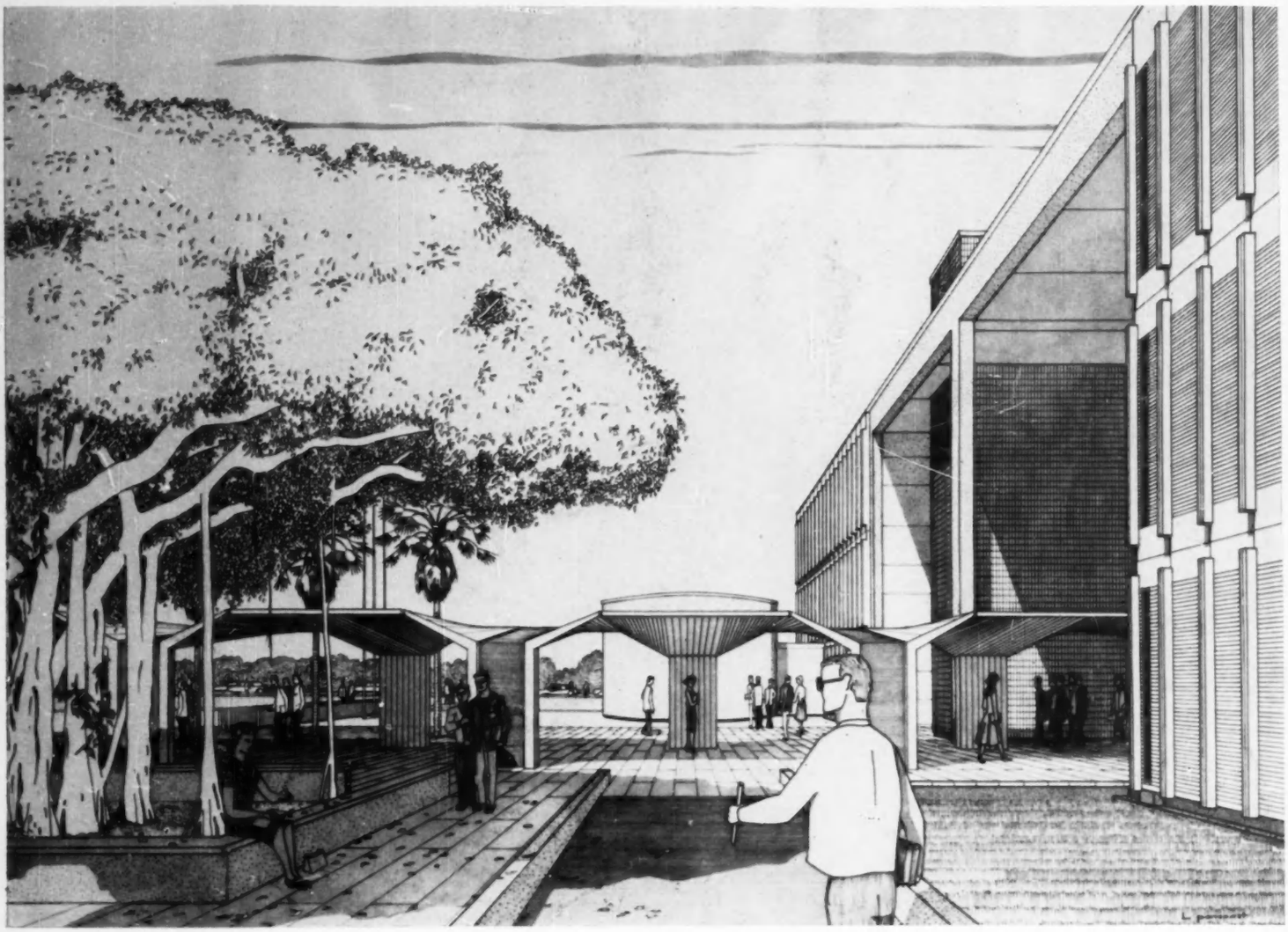
Flexibility is the aim of the fourth floor; movable walls will provide for seminars, exhibits and experimental projects. A penthouse studio on the fifth floor, with a planted garden around it, will be used by the director of the Center.

"Between 1902 and 1917 Le Corbusier was, in his native country, closely involved in the birth and organization of a special educational section for architectural evolution. Thanks to an exceptional teacher, young and full of initiative (L'Eplattenier), an educational center limited to twenty students, men and women, existed during fifteen years exciting the interest and the hostility of people. In one single place were taught drawing or color, volume, modeling, etc. . . . , construction (furniture, etc.), jewelry, embroidery, etc., etc. . . . Le Corbusier began with a burin in his hand and the goldsmith's hammer and chisel, realizing, though very young, excellent works. He made his first house when he was seventeen and a half without ever having studied architecture. This house, subjected to the influence of that time and of his teacher L'Eplattenier, gave an opening to architectural decorations: "scraffiti," mural painting, furniture, wrought iron, embossing, etc. . . . During the following years this school undertook building works (decorative, of course, since it was the fashion at that time): metal, stone, mosaic, stained-glass windows (concert-room, church, fragment of a public edifice, etc. . . .). One day everything collapsed before the rivalry and the hatred which had roused the Old School against this New Section. . . the manifestation of individualities, the divergencies, finally overcame the enthusiasm.

"And the whole concern collapsed.

"From this first experience Le Corbusier has kept the instinct of the prophetic, indispensable, practical and beneficent relations *between the hand and the head*. The rupture of this collaboration of the hand and the head brought by mechanism and bureaucracy has fomented little by little a monstrous society which would be on the decline if no reaction interfered.

"Harvard University's initiative has therefore found in Le Corbusier a ground which is naturally favorable to the implantation of the ideas which constitute the present program of this University."—**LE CORBUSIER**



JUNIOR COLLEGE BY PANCOAST, FERENDINO, SKEELS & BURNHAM, ARCHITECTS

The campus of the Dade County Junior College in Florida encompasses 45 acres and includes a three-story administration, academic and library building, flanked on the north by a two-story, 4000-seat gymnasium, and on the south by a two-story fine arts and technology building. To the east is a one-story student center, with its cafeteria overhanging a dredged lake. Fill obtained from the 35′ deep lake was used to reclaim lower portions of the site.

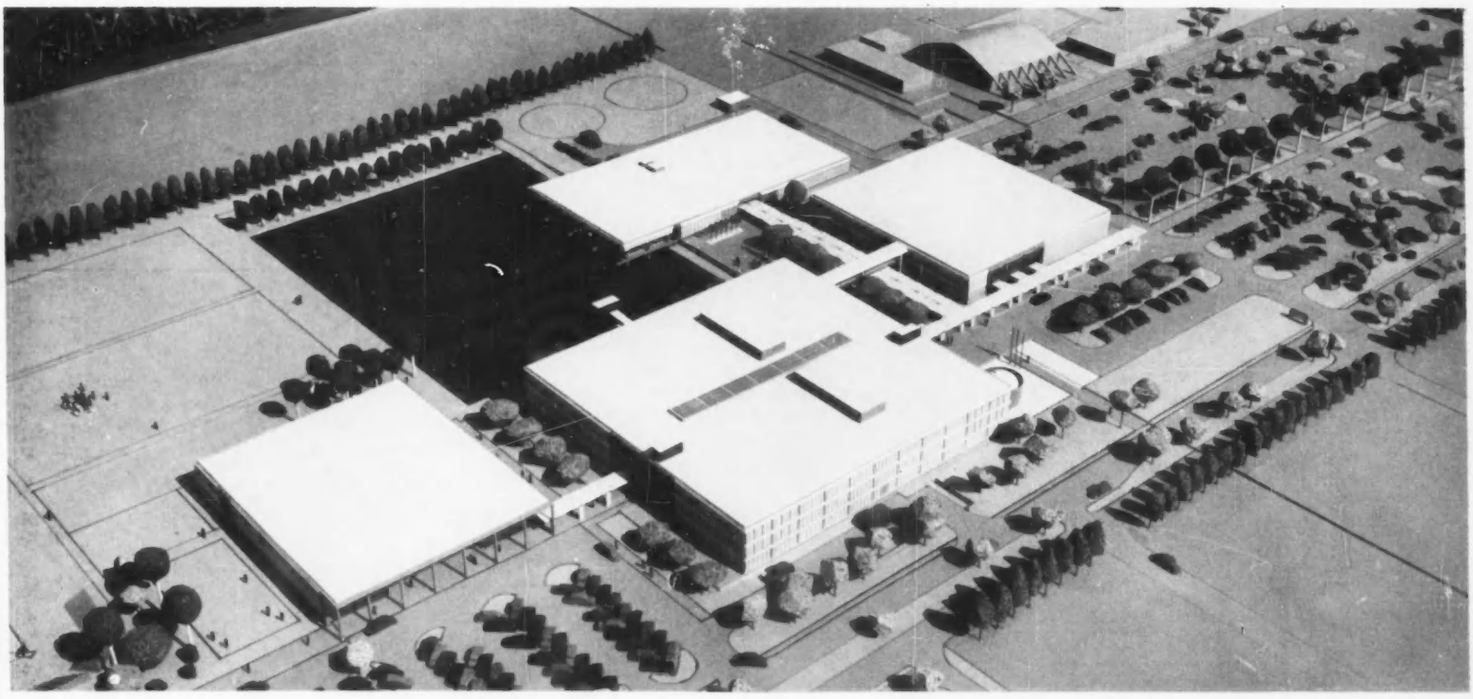
From the two 1500-car parking areas, sculptural precast concrete walks lead along the strong axis of the campus and to the prominent entrances of all buildings, providing generous protected loading entrances important in a subtropic region. The covered walks and multi-trunked ficus trees qualify and soften the spaces between building masses. A three-story skylighted concourse flows through the main building.

All buildings are fully air conditioned. Except in the cafeteria, glass areas are limited to narrow slits in the strongly ribbed precast panels.

Rougher, unpainted, poured-in-place structural concrete is contrasted with the precision of quartz finish precast walls and covered walks. The three fire towers of the main building and special surfaces throughout the school are white glass tile.

The central element and the lake will be built immediately, the other buildings will follow as state funds become available.

PHOTOGRAPH SHOWS HOW ADJACENT PRECAST PANELS ABUT, THEIR COMBINED RIBS FORMING THE MOST PROMINENT FEATURE OF THE FENESTRATION. SOFT GRAY COLOR AND HORIZONTAL TEXTURE FURTHER HELP TO SOFTEN EFFECT OF PANELS IN STRONG SUN.

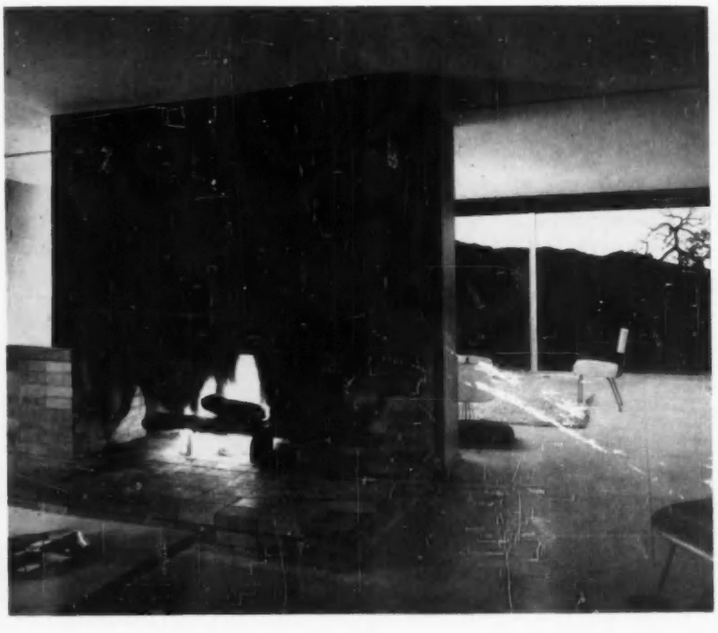


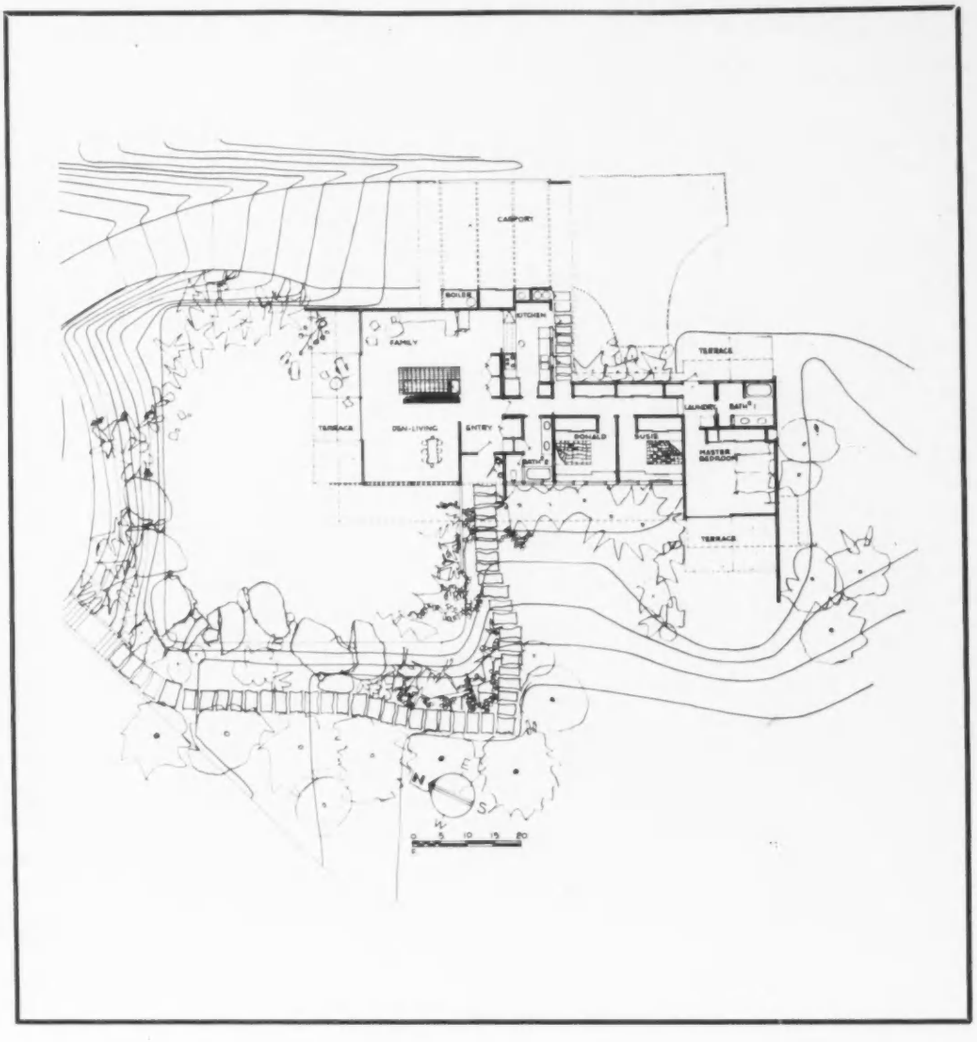
THE ENTRANCE WALK IS SEPARATED FROM THE PATIO AT THE LEFT BY A 6-FOOT WALL

HOUSE BY RICHARD NEUTRA, ARCHITECT

VIEW TO THE ENTRANCE WALK

FIREPLACE, LOOKING WEST





The house is located on a small hill, overlooking the distant mountains across the valleys to the north and south. Large boulders and rocks were left on the terrain to become part of the landscaping which will include many varieties of cactii.

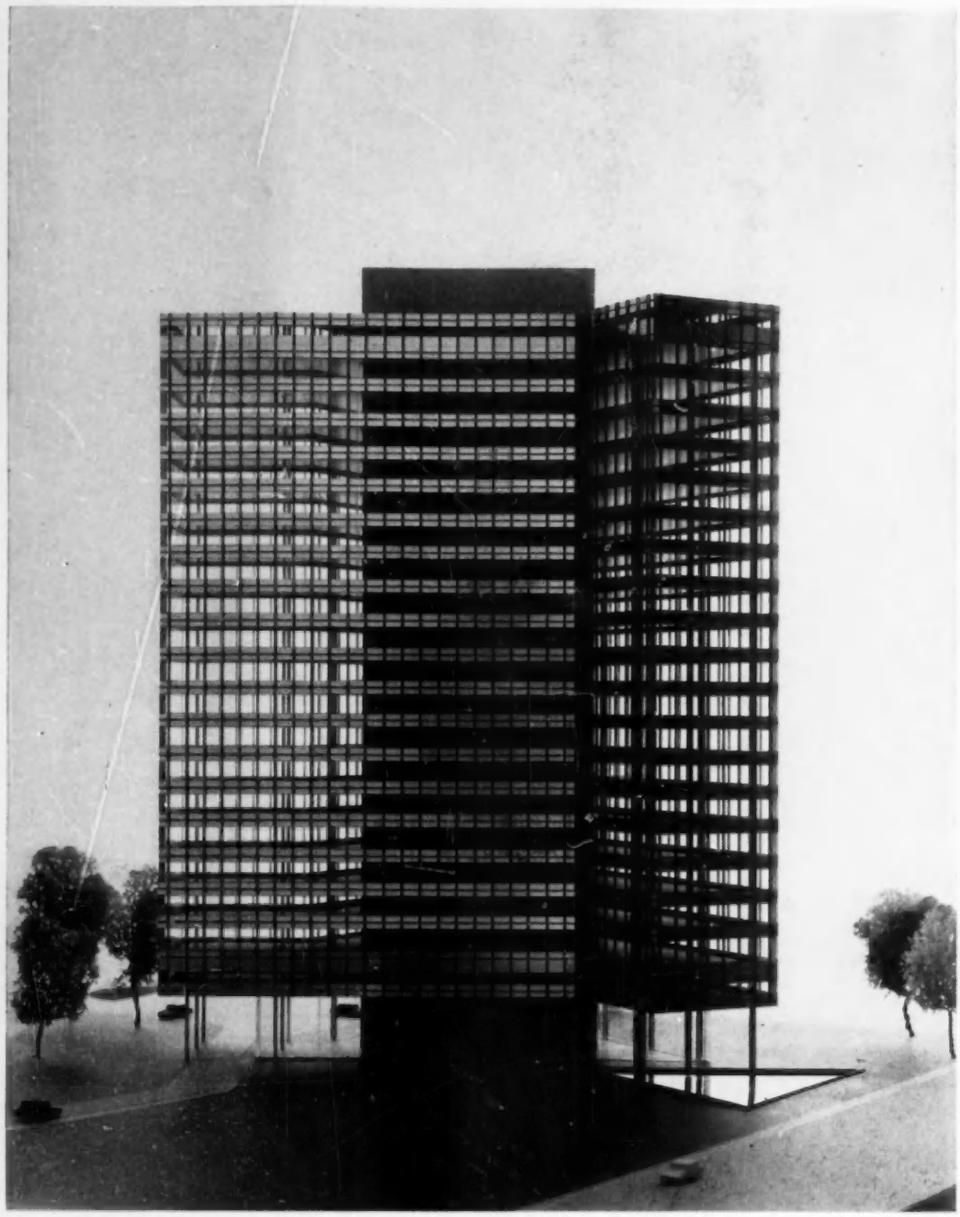
The entrance walk leads into a hall separated from the living quarters by a 5'6" high wall. The sleeping quarters and bath are at the right. The living room and family room are separated by a dark fireplace which intersects with the white ceiling which expands into a large roof projection.

The family room opens into the kitchen over a counter which can be used from both sides. The master bedroom with its own patio faces south. All walls and ceilings are white; the woodwork is blond birch, color accents are Chinese red and lemon yellow.

COLLABORATORS: SERGE KOSCHIN, BENNO FISCHER, JOHN BLANTON

MASTER BEDROOM IN THE FOREGROUND WITH ITS OWN TERRACE. NOW LANDSCAPED

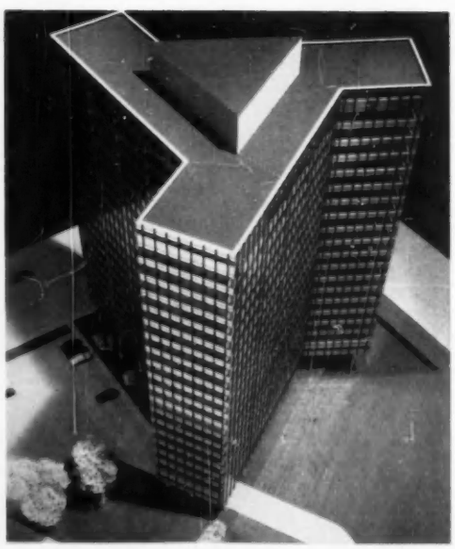
PHOTOGRAPHS BY JULIUS SHULMAN



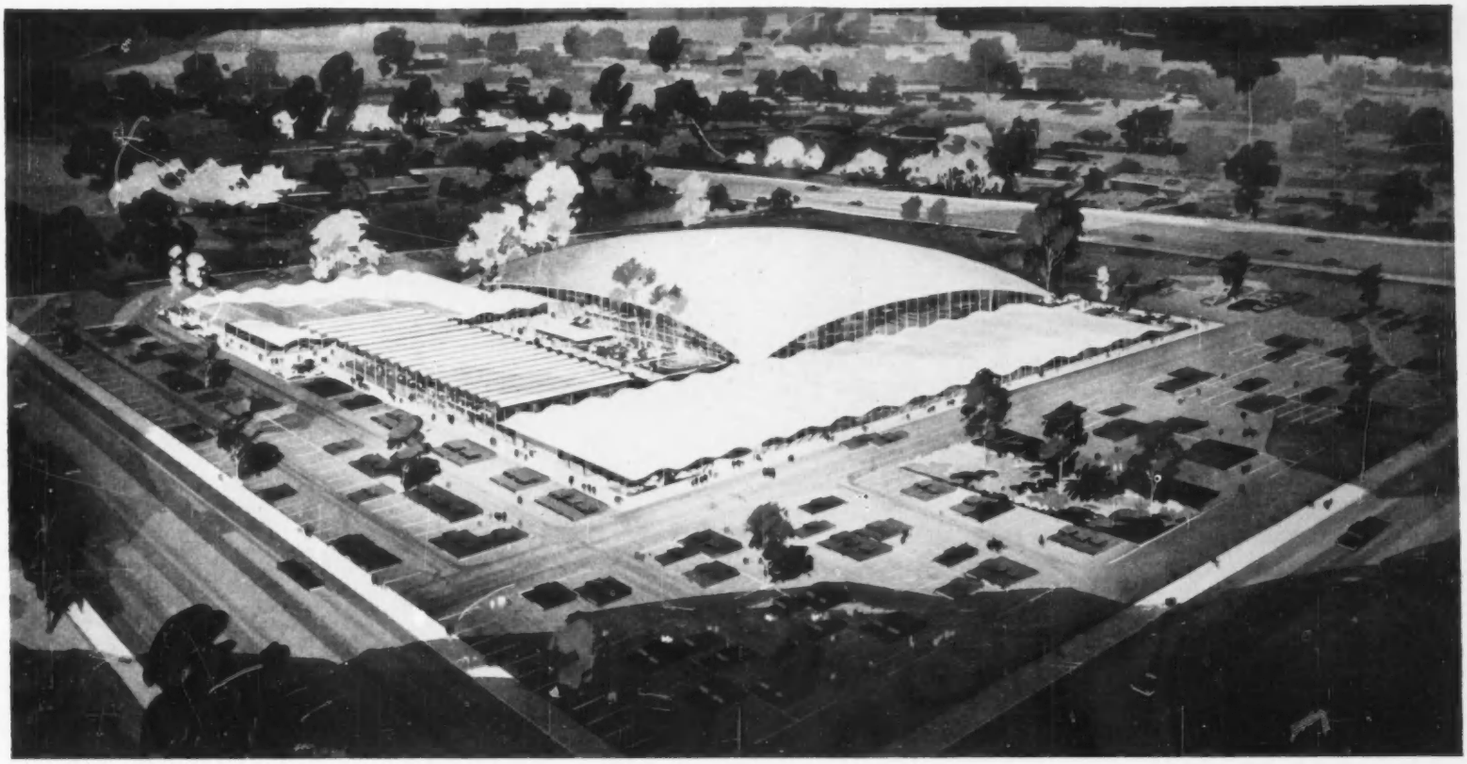
This building, to be erected in the center of Hamburg, Germany, has been designed with three wings radiating from a center core triangular in section. This core, containing the elevators, dressing rooms, toilets, all mechanical and maintenance installations, will be of reinforced concrete, completely closed and faced with stone to emphasize its static functions.

The three wings, each of which will house 16 floors of offices, plus an executive suite, dining-room and lounge floor, a cafeteria for employees, have a steel frame structure with completely transparent glass facades. The concrete center will be clearly visible from the large glass hall on the ground floor.

UNILEVER BUILDING BY HELMUT HENTRICH AND HUBERT PETSCHNIGG, ARCHITECTS



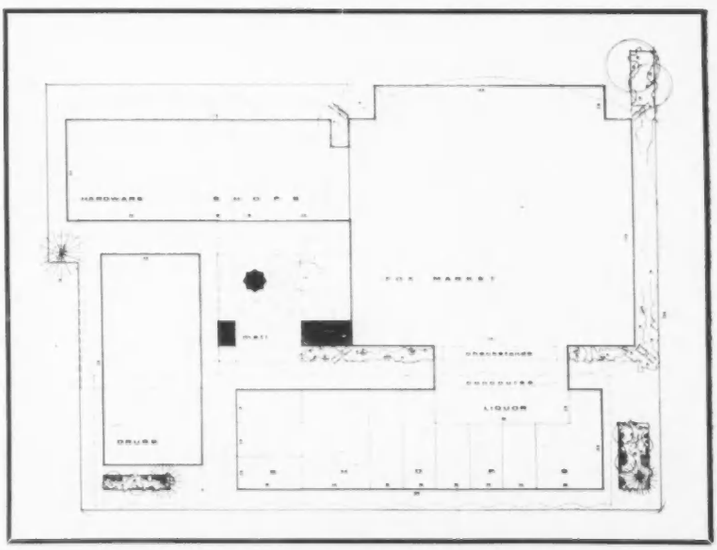
PHOTOGRAPHS BY INGE GOERTZ-BAUER

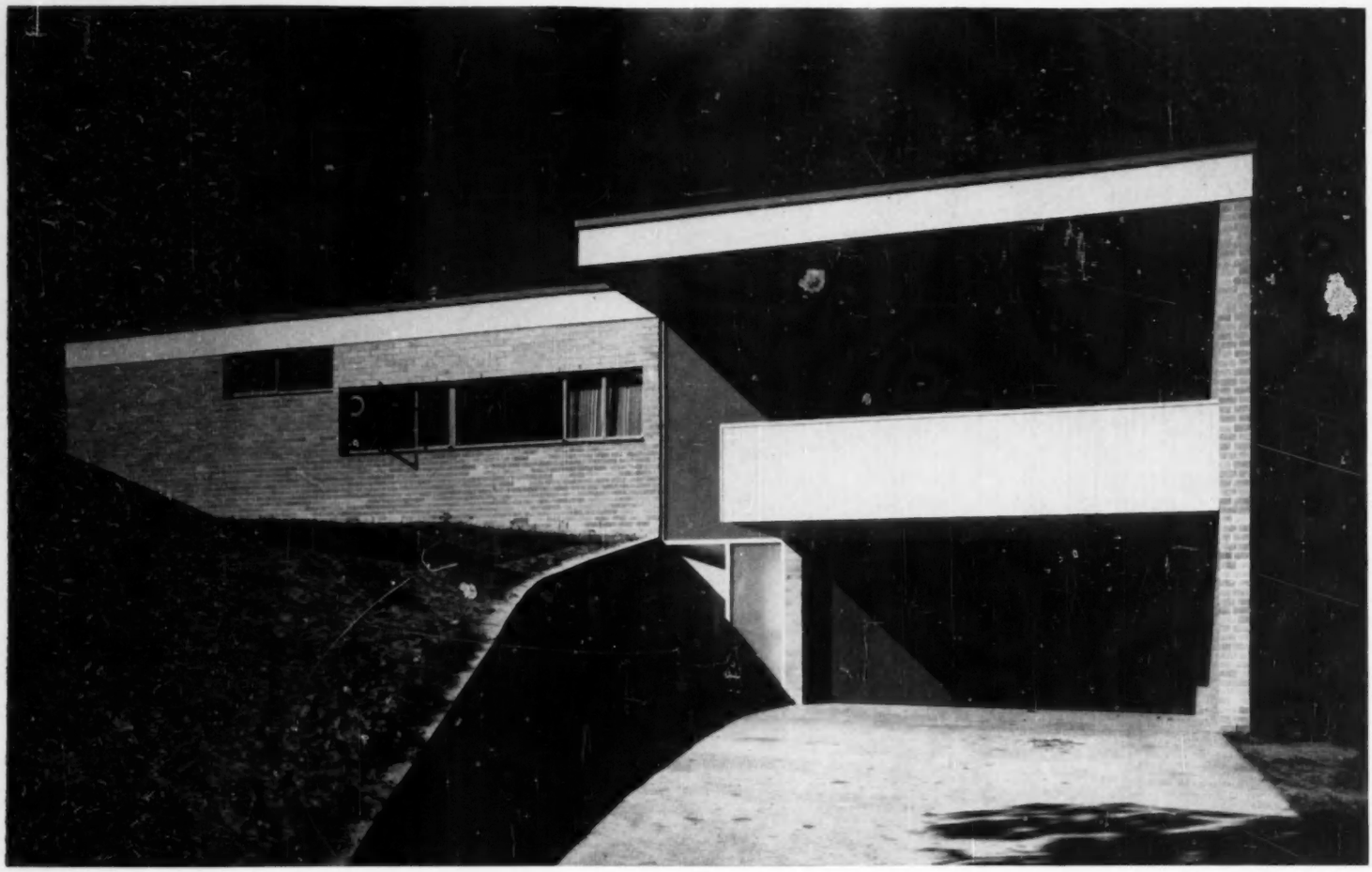


SHOPPING CENTER BY R. LEON EDGAR, ARCHITECT

This new shopping center to be constructed on a 6½ acre site in the San Fernando Valley will have as its principal building a supermarket of approximately 30,000 square feet. The center will include 17 other shops. Three foot-traffic points have been created leading into the mall from which each store is accessible, the mall being the interior focal point with reflective pools, landscaping, fountains, seating, removed from the noise and confusion of car traffic.

To obtain flexibility within each structure, it was decided to use concrete in shell construction of three basic forms, each component becoming a part of the overall concept. The market structure, with its hyperbolical sphere, measures approximately 170′ x 150′, the apex being 28′ high. The slab varies in thickness from 8″ to 6″, the shell is carried on arches into the buttresses. To allow movement the connection between the arches and the buttress is a 27″ diameter steel ball received by bearing plates allowing complete movement created by the temperature changes. The entire sales area of the market is completely free of columns or other obstructions.





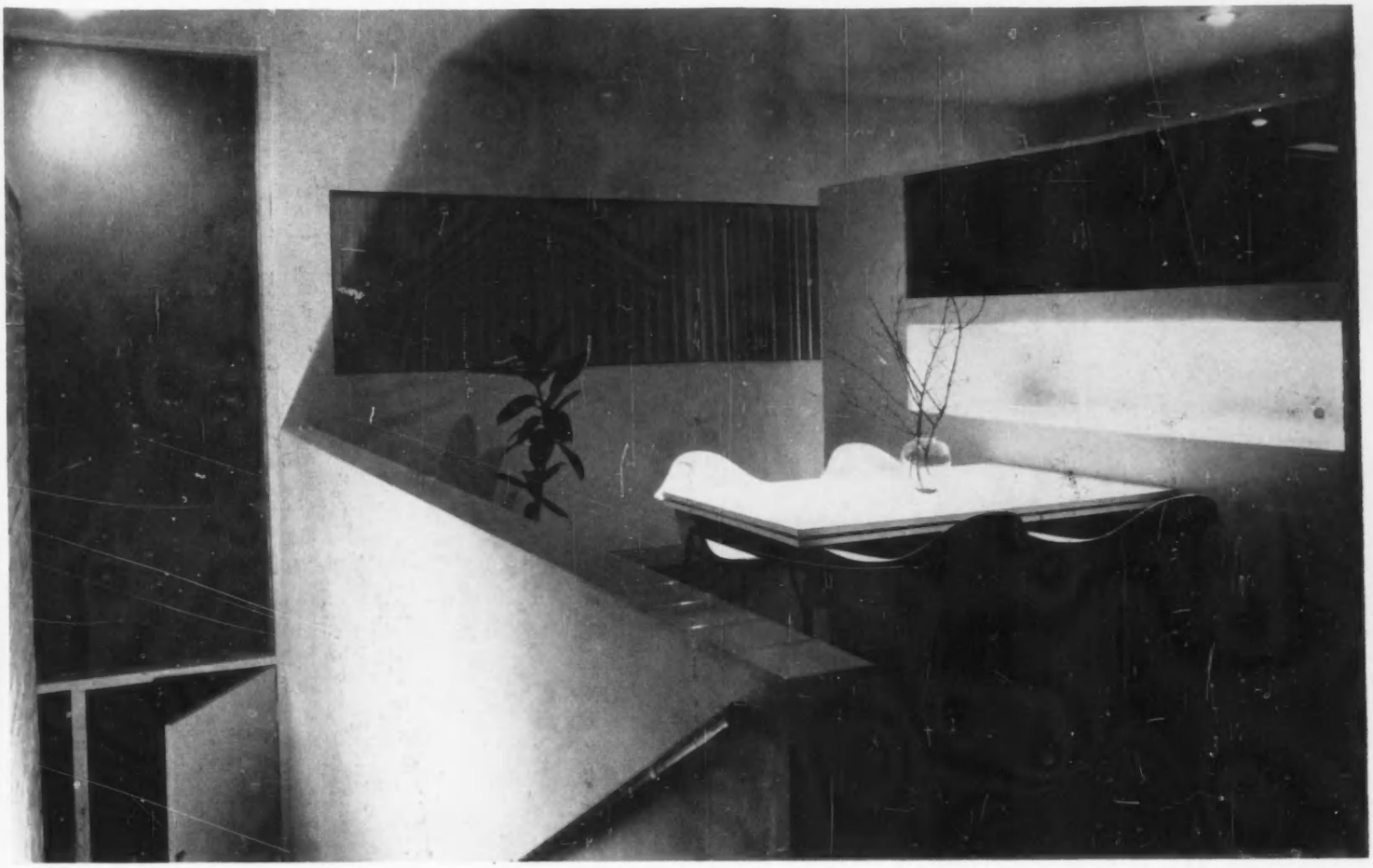
HOUSE IN AUSTRALIA BY HARRY SEIDLER, ARCHITECT

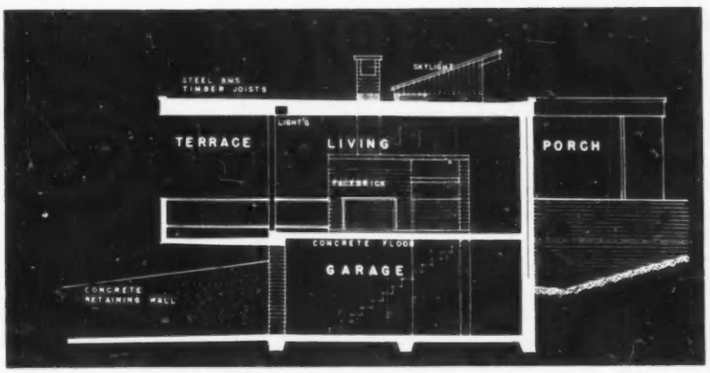
This house, in a new subdivision around a dead end street, stands on an awkward, wedge-shaped sloping site. Building was made difficult by the flowing sandy condition of the ground, and the house had to straddle a main sewer line.

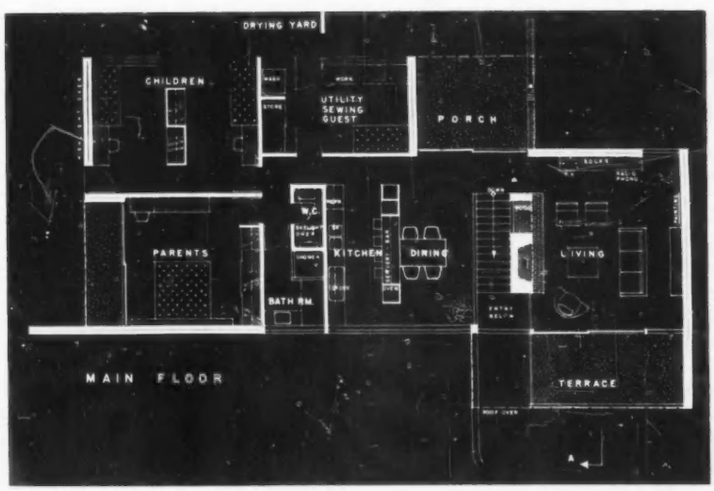
The house faces north and the rear fronts a large, open park space toward the south. It was designed to have all living areas level with the high portion of the property. Access from the street is through an excavated lower floor accommodating an entrance and double garage contained by concrete retaining walls.

The main floor opens the living space with its full height sliding glass doors in two directions: toward a cantilevered living terrace on the north above the street, (a roof projection creates shade and cover for the entrance;) and toward the park through glass doors giving onto a covered porch to the south. This double exposure of the long rectangular living area produces a flow of space which is emphasized by a vertical cut in the center, the main entry stair and the free-standing, six-foot-high fireplace. The kitchen with its breakfast and serving counter is included in this main part of the house. The master bedroom facing east opens to a small garden court. The multi-purpose room can be used as a guest room.

The structure is reinforced concrete; the exterior walls are of terra cotta face brick which is also used on one wall of the living room and on the fireplace. The roof is open-web steel beams, timber joists and decking. The color scheme throughout aims toward a neutral background of gray and terra cotta face brick accented with bright yellow curtains, matching yellow plastic dining chairs, black upholstery fabric and cabinets with black sliding glass doors, and white Formica tops on all tables and cupboards. Floors are carpeted in dark gray in the living room and master bedroom, medium gray vinyl tiles are used in the rest of the house.







PHOTOGRAPHS BY MAX DUPAIN

PRODUCTS merit specified

for the new Case Study House

The following are the first specifications developed by the architects for the new Case Study House No. 24 and represent a selection of products on the basis of quality and general usefulness that have been selected as being best suited to the purposes of this project and are, within the meaning of the Case Study House Program, "Merit Specified."

Case Study House No. 24 by A. Quincy Jones and Frederick E. Emmons, architects, for the magazine, ARTS & ARCHITECTURE

Arcadia Sliding Glass Doors—Manufactured by Acme Metal Moulding Company, 5022 Triggs Street, Los Angeles

Pomona Ceramic Tile Walls and Counters—Manufactured by Pomona Tile Manufacturing Company, 629 North La Brea Avenue, Los Angeles

Thermador Kitchen Appliances—Manufactured by Norris-Thermador Corporation, 5215 South Boyle Avenue, Vernon, California

Stanthony Electric Barbecue Unit—Manufactured by Stanthony Corporation, 5341 San Fernando Road West, Glendale, California

Waste-King Dishwasher and Garbage Disposer—Manufactured by Waste King Corporation, 3300 East 50th Street, Vernon, California

Portland Cement Retaining Walls—The Portland Cement Association, 816 West 5th St., Los Angeles, California

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CASE STUDY HOUSE NO. 24—JONES & EMMONS

(Continued from page 12)

an undulation of land is an integral part of the total community pattern.

The device used to create the sculptured appearance that ties together the adjacent houses and relates them directly to the surrounding landscape is one that permits unusual variety and texture within the individual community: excavation of specific areas within the living spaces of the house and careful relocation of this excess earth.

Sound privacy: In this house, the floor is lowered approximately two feet below the conventional level. The resultant earth is used to fill the spaces between houses. These built-up sideyards become sculptured earth mounds that establish insulation from external sound and create a means for increasing temperature comfort levels within the housing structures.

Sound, the same as light, travels in a straight line.

The accompanying sketch illustrates the manner in which "outside" sounds travel up—and—over the house. "Family generated" sounds and noises are contained and not transmitted to the neighbor. Family noises will be absorbed by proper acoustic treatment of required surfaces within the respective houses.

Visual privacy: Every room of the residence relates to its own garden. This garden is protected visually by a seven-foot retaining wall. Because sight lines are straight, the same as sound and light, the same reasoning outlined for sound privacy works for the visual privacy of the occupant.

Thermal insulation: The sketch which illustrates principles of sound privacy applies also to the function of thermal insulation. The roof of the house is water-filled. Water is supplied by spray heads which yield a steady but fine fog mist. During the heat of the summer the roof water evaporation, accentuated by the fine spray of fog mist, will maintain the ceiling temperature of the house at a level below seventy degrees. The floor slab on grade and side walls, backfilled with cool earth, will also maintain a surface temperature below seventy degrees. It becomes apparent that the occupants will live in a cool envelope. The cool surfaces which surround this living space will produce the same kind of "even" comfort expected from conventional air conditioning systems. Because water and earth are among the best of insulators, the Case Study House will be considerably easier to heat and cool than the conventional above-grade house.

Plan variations of the house permit diversity of room arrangements, depending upon site shape and family requirements. Future publication will illustrate some of these plan variations.

PIER LUIGI NERVI—THE INFLUENCE OF REINFORCED CONCRETE . . .

(Continued from page 17)

execution or, in the opposite case, designers who do not adopt more modern solutions through uncertainty or ignorance of the possibilities of building execution.

A light sand-blasting was used, I think for the first time, on the exposed concrete parts of the UNESCO building and it proved to be particularly successful in removing the stains left by the oil spread on the formwork to prevent the mix from sticking, and in eliminating the whitish efflorescence which some times occurs during the curing period. The sanding removes none of the surface's freshness, which is mostly due to the markings of the planking and the pattern of the knots and grain of the wood; however, even this quite simple operation needs precautions and particular care. The workman in charge has only to allow the jet of sand to remain stationary for a few seconds, in a moment of inattention, to cause a permanent erosion.

The perfecting of the various stages of construction, and in particular that of the formwork, has allowed the use of new structural forms characteristic of concrete. Particularly expressive among these are columns of varying section generated by straight lines, which present a great richness of possible forms and are capable of expressing a pure structural logic.

How can we doubt the decisive contribution made to architecture by building materials and techniques when we consider that sections of such a kind as to have the architectural importance and the aesthetic expressivity of the columns and capitals of the past could not be built at a reasonable cost using any material other than reinforced concrete?

It seems to me that a few examples like these would show clearly the wealth of forms which architecture has acquired by coming into possession of a material which is highly resistant and has the disconcerting property of starting off plastic and being able to take the shape of whatever mould it is poured into.

In the field of flat structures the use of a certain type of mobile formwork, which I had the opportunity of studying about fifteen years ago, has permitted an appreciable advance in the direction of a freer and more aesthetic disposition of structural ribs. The preparation of these forms is relatively easy and, if the building is large enough in area, they allow an appreciable saving in expense independent of the saving made possible by the fact that the perfection of the ceiling surfaces allows the elimination of the plaster finish.

The process is naturally capable of further improvements and, most important, of extension to large dimensions. My use of it so far has been limited to the repetition in series, even over very large areas, of spans of the order of ten metres by ten metres with a rib in depth (and a consequent lowering of the shuttering when removed) of less than a metre.

In this case too—as in all delicate operations—one meets with unforeseen problems, from deciding the quality and method of application of the oil used to prevent the concrete from sticking to the formwork, the design of the mobile scaffolding, the profile of the ribs and the dimensions of the repeating bay, to the program of placing and the consideration of how each span is to be linked to the next one.

It is therefore superfluous to emphasize the fact that work of this type demands a certain experience, not only in the creator and designer, but also in the office technicians and, above all, in the foremen and skilled operatives on the site.

In the continuous research which I have pursued for more than thirty years with the aim of freeing concrete structures from the formal and structural slavery of wooden formwork, I have found two other methods of construction particularly efficacious: that of building slender structures of cement mortar with a widely spread reinforcement built up of multiple layers of wire netting and rods of small diameter; and that of structural prefabrication.

The first process, which I have called (not very appropriately) 'ferro-cemento', allows the reduction to a minimum and even the complete elimination of formwork, either in timber or in other materials. In fact, when a high quality mortar of cement and sand is spread by hand on a steel reinforcement completed

by well placed layers of wire netting, it is held perfectly in place by the netting and can be given its finish at once. Using this process I have constructed ships, a large sphere designed by the architect Libera for an exhibition, and the undulating sections, fifteen metres in span, of the projecting part of the canopy at the Stadio Flaminio at Rome.

The system has many possibilities; its essence is that, with an unlimited freedom of form, it allows the transformation of any cage of rods and wire netting into a concrete structure. From the structural point of view, when the combination of fabric and rods is such as to give an evenly distributed metal content of about 300-400 kg per cubic metre of cement mortar, you obtain a very resistant material which is practically waterproof and will not crack. In the field of thin vaults it allows a freedom and variety of architectural interpretation which would be quite out of the question with any other system of construction whatsoever.

Prefabrication, however, still seems to me the building process richest in structural and architectural possibilities. It falls into two main categories; prefabrication of whole load-bearing units, and the subdivision of a building into relatively small sections which can be prefabricated and then joined together to form a structural and architectural unity.

The first category includes structures composed of beams placed side by side, relying on each other and yet remaining individually capable of bearing the share of the load entrusted to them. The process is especially suitable for flat roofs and for the decks of bridges but, in fact, in most cases it has no special architectural significance. In effect, the advantages of prefabrication are limited to the possibility of varving the section of the beams with far greater freedom than that allowed by timber formwork, and therefore it allows delicate refinements of shape to be obtained.

However, as the dimensions of building to be prefabricated are increased, the weights involved rapidly become such as to demand the use of very, if not prohibitively, expensive mechanical site requirement. For blocks of flats prefabrication seems to be possible and economically profitable only if applied under special conditions, not often met with, where there is perfect uniformity in a sizable number of buildings, and the conformation of the ground allows the use of mechanical means of transport and lifting. Besides, it seems unlikely that the aesthetic uniformity arising from it would often give a pleasing architectural result.

On the other hand the second category of prefabrication, for which I would like to propose the name of 'structural prefabrication', offers an unlimited wealth of shapes and architectural features besides its economic advantages and relative ease of construction. As I have already indicated, its essence is that it produces a structurally and architecturally unified building by the skillful joining of prefabricated sections.

The process displays all its richness in the construction of vaulted roofs, either for the various sorts of dome already part of architectural tradition, or for the larger and more varied ones of the near future.

The most significant aesthetic of the process seems to me to be the effect of the repetition of identical sections, which, being mass-produced, can be designed with a complete freedom of form and made with absolute accuracy, and by the enrichment due to the necessity of joining or completing the individual sections with other sections which, if designed with sufficient care, contribute to the final architectural result.

To use this process too—and perhaps even more to use those already discussed—the designer needs a complete mastery of building technique in its smallest details and the building organization needs personnel experienced in these operations among both the office technicians and the workmen on the site. A sensible proportion between the weights of the sections, their dimensions and the mechanical equipment to place them in position, the choice of the techniques to be used on the site to obtain the indispensable exactness of execution—all these are equally necessary to obtain a good result.

Among the real qualities of the system, its intrinsic economy and rapidity of execution seem to me particularly important; in this respect we have only to consider the fact that, while work is proceeding on the foundations of a building, the prefabrication of all the sections which are precast on site can be begun, and this method has all the advantages of mass-production.

Among the methods of construction which contribute most to enrich the architectural possibilities of reinforced concrete, we must finally remember prestressed concrete. The slenderness of supports and the elegance which can be obtained by using this process cannot be equalled in the whole field of building. The future is full of promise for this technique.

I think these few remarks should suffice to make clear the very close relations between structure and building methods in reinforced concrete and the architectural conception and result.

To plan convincing work in concrete without a sufficiently exact knowledge of the very rich building possibilities of this technique is an absurdity comparable to that of the man who, feeling capable of a musical phase, imagines himself a real composer, although he knows nothing of instrumental technique or of the theories of counterpoint.

The designer of the near future will be obliged to take building technique more and more into consideration and this development, which has scarcely begun today, will constitute the essential difference between the mental attitude of the architect of fifty years ago, a simple designer of decorative forms, and the architect of tomorrow who, in his true role as master builder, will restore to the title of architect all the loftiness and nobility it has had from the most distant past.

If, on account of my own particular professional interest, I have been led to talk at some length on the subject of concrete techniques, it is easy to see that steel, light alloys, plastics and their building possibilities and techniques are, with equally decisive importance, the causes and results of unprecedented architectural conceptions whose timid beginnings today will certainly be followed by a splendid flowering in the near future.

With the change-over to building in steel the dimensions of the essential elements of the traditional masonry architecture of the past undergo an even more clear-cut and decisive transformation than that produced by the change-over to building in concrete. For example, a building may be 30 to 40 metres high in masonry, 100 to 150 in reinforced concrete and 300 or more in steel. Is not a building's height an essential part of its architectural effect?

But, as I have already pointed out in connexion with reinforced concrete, the appearance of buildings is determined not only by

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the material used and its mechanical characteristics, but also by the techniques applied to the particular material. There is a substantial difference of appearance between riveted and welded steel structures, between the profiles of steel sections and those of light alloys obtained by extrusion, and this difference has inevitable repercussions on the expressiveness of works of architecture in which they are used.

In the field of wooden structures it will be enough to remark that the new adhesives which permit the perfect joining of planks of wood to form artificial beams stronger than the original tree-trunk permit new structural and architectural solutions which have little in common with the creations of the past, magnificent though they are.

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What a promising vision it is! Residential areas built with aluminum framework and panels in laminated plastic, clean, attractive, well protected from heat and cold by the very high insulation qualities of the synthetic resin foam with which the walls and roofs will be finished.

New and unlimited horizons are open to the building of the future, but the first necessary condition for the fulfillment of these happy promises is that architects should take a passionate interest in details of technique and construction, so as better to be able to use the already enormous possibilities of the building materials and systems of today, and to prepare themselves for the full exploitation of those which industry and technology will make available in the near future.

Nevertheless, however decisive the results of the new building materials and techniques may be in the evolution of the vocabulary of architecture, it may be said that the influence of technical progress in general—and of technical progress in building in particular—on the most intimate substance of architectural thought is perhaps still deeper even if less evident.

In these last decades we have seen the dimensions and the structural importance of a great number of buildings growing at an ever-accelerating rhythm. We already have buildings 200 or 300 metres high, domes or vaulted roofs of a hundred metres span or more, bridges with arches of more than 200 metres and suspension bridges of 1500 metres; we will soon certainly have much bigger ones. Even the number of these works of great structural daring will continually increase, because it is determined by economic and social reasons in strict relation with the progressive development of modern civilization.

Now it must be remembered that each of these works is dominated—and the bigger its dimensions the more strictly is it dominated—by structural necessities which are, in their turn, the consequence of natural laws completely independent of man's will or aesthetic feelings. The profile of an arch bridge of 200 metres or more must follow accurately the line of thrust of permanent loads. Any attempt to depart from it to an appreciable extent would make the work impossible to carry out. The catenary curve of a big suspension bridge is fixed and unalterable in time and place; a dome of a hundred metres or more, or a vault of equivalent size, must obey structural laws which cannot be disobeyed without intolerable increases in cost and waste of material.

If an architect today wished to build a dome, more than a hundred metres across, the shape of the Taj Mahal, he would very soon find such an architectural formalism impossibly expensive and would quickly be led back to structurally better shapes. And if we bear in mind that even for less daring buildings the most convenient solutions are those based on simple structures, it is easy to see that pressure in favor of structurally better solutions will become continually more decisive.

Finally if we add that in other fields, especially that of high speed on land or water or in the air, the shapes of our creations tend, in the constant search for maximum efficiency, to approach an ideal form in perfect harmony with the laws which govern dynamic equilibrium and resistance to movement, it is easy to see that every day we come into contact with things whose forms are determined by natural factors which we can only press into service but cannot interfere with or modify. Unless we foresee in the near or more distant future a voluntary abandonment of science and a return to the empiricism of the past (an event which really seems unlikely and even less to be hoped for), it becomes plain that the number and expressive efficiency of these creations in perfect accord with the laws of physics will continually increase.

In the field of architecture this will mean a progressive trend towards the ideal buildings which, because of their perfect adherence to the laws of structural equilibrium, represent the goal of perfect technology. We are witnesses of a grandiose spectacle: technical progress which, after all, is only the continual search for the maximum return (in the widest sense of the word) is driving a host of human creations in directions indicated by the signposts of immutable physical laws. These creations will constitute points of reference by which taste in other fields may be orientated, which may, in other words, form a 'style'.

With the passing of centuries, 'styles' have gradually changed either because of natural cultural evolution or because archeological discoveries or the knowledge of other civilizations brought forward new formal or spiritual ideals; our century will be renowned in the most distant future for having initiated a 'style' of adherence to the laws of physics which can never be changed until humanity renounces the advantages of science to retrace backwards the path it has travelled between pre-history and today.

The style whose beginnings we see can be called an authentic *style of truth*, because the ideal forms which inspire it are *true* in the fullest meaning of the word.

The shapes of least resistance to penetration are *true* and immutable. A great arch whose average stress is the curve of its permanent load is *true;* the catenary of big suspension bridges is *true* and immutable; a great iron girder whose profile follows the line of the bending moments is *true*.

And besides, how can we deny the aesthetic emotion which these ideal forms give us and the sense of sublime serenity which we derive from them?

How can we fail to rejoice at the fact that they can become the guide of mankind's aesthetic taste?

How can we deny the value of an immutable guide, the same for all men, an efficacious method of promoting universal brotherhood, across all divisions of race, color or religion?

Why should we fear, as some have, that all this, which is anyway inevitable, may lead to an intolerable monotony, when the past shows us that the general direction given by styles has never hindered the development and the affirmation of individual personalities, or of the collective personalities of nations?

However in order that these marvelous promises may be fulfilled, architectural sensibility to form must be united with the new techniques; architects must work with engineers and, above all, they must learn to appreciate the true value of Building Science and love it as the composer loves his instruments.

Only in this way will the architect become the true creator and conductor of the great architectural symphony which tomorrow promises us.

From a paper delivered at the Congress of the International Union of Architects, London, 1961.

MUSIC

(Continued from page 7)

should be adopted and a new 12-tone method of musical grammar derived from it. This system, though resisted by traditional musicians, is now generally accepted, with innumerable modifications. It places the emphasis on dissonance and allows the creation of new harmonic combinations. Schoenberg called this new freedom "the emancipation of the dissonance." Here is where musical composition is today.

Two American composers, both of whom studied with Schoenberg, have extended his theory along contrary paths. John Cage

said: when Schoenberg had emancipated the dissonance he should have gone farther and emancipated music from its notes. Lou Harrison said: when Schoenberg had reduced all music to a single key of 12 tones he should have gone farther and retuned the intervals of this single scale to their former acoustical purity.

Another American composer, Charles Ives, anticipated Schoenberg's emancipation of the dissonance. A confirmed Transcendentalist, Ives was more concerned about the character of the music that he wrote than with theoretical explanations. He broke all the traditional laws and anticipated nearly all the 20th century amendments. He broke the rule that music should not be written in simple consonances. He wrote music of great interest that includes a component of sheer noise.

Thus there are at the present time four diverging possibilities of musical growth: (1) by way of Equal Temperament and 12-tone or serial method towards steadily expanding dissonance; (2) by way of the invention of new tones outside the 12 tones of the tempered scale; (3) by way of a return to acoustical purity and consonance; and (4) by way of non-tonal sound or noise. A fifth possibility exists, though it has not yet been exploited by modern composers: by way of variable systems of tuning, as these were used or at least explored by some 17th and 18th century composers.

Among these conflicting systems or possibilities, what has happened to musical form? Suzanne Langer has written: "Music is 'significant form,' and its significance is that of a symbol, a highly articulated sensuous object, which by virtue of its dynamic structure can express the forms of vital experience which language is peculiarly unfitted to convey. Feeling, life, and emotion constitute its import." Notice that she does not define music by saying that it consists of harmony or notes, or even sound. Silence is behind and penetrates all music.

For those who believe that music must begin with knowledge of form or structure or that it must direct itself to the emotions an answer can be found in a general observation by the great American philosopher C. S. Peirce: "It is a widespread error to think that a 'final cause' is necessarily a purpose. A purpose is merely that form of final causation which is most familiar to our experience. We must understand by final causation that mode of bringing facts about according to which a general description of result is made to come about, quite irrespective of any compulsion for it to come about in this or that particular way. Final causation does not determine in what particular way it is to be brought about, but only that the result shall have a certain general character."

Stand on a street corner listening to the traffic. The patterns of traffic, the high and low pulsations of the vehicles are as comprehensible to our ears as a symphonic movement. The traffic lights impart dynamic periodicity. The cop is the conductor. Here is an example of musical sound as natural to our ears as the melodic patterns of an intoning voice were to our ancestors. These accidental coincidences of sound interested Charles Ives, as when at a July 4 picnic two bands marched together to play each other down. Ives recorded the event in a symphonic movement, blurring the boundaries between pitched and non-tonal sound and noise, in a manner not unlike yet quite different from the ensemble of exactly pitched notes we are conditioned to call Music.

Confucius spoke of "the full heart that beats the sounding stone." Suppose you think of music in this way, as "emotion." Whose emotion? the composer's? the performer's? Or some private emotion of your own? Will the "Confucian music" of Korea, played on the same stone chimes Confucius knew, stir our ardor like his? Can we, unprepared, experience the same emotion Arnold Schoenberg wished to convey by his String Trio, that celebrates his recovery from a serious illness? Will we, by listening, alone, find the same emotion in the *Dankgesang* of Beethoven's A minor Quartet, written to celebrate his recovery? Emotion is not the criterion, though it enters into the experience. Music is made of sound. The sounds of Schoenberg and their expressive disposition are not less marvelous than those of Beethoven; only the form is different.

What sort of sounds? Or what sort of form? Both are relevant. Does the form determine the sounds, or do the sounds shape the form? I think we shall recognize that each plays on the other. To make new sounds there must be new form, to make new form new sounds. Each determines and requires the other. We have reached the end of a long period when certain types of pitched

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notes achieved certain types of form, and those forms required those notes. Should we listen to the notes of any composition by other rules of pitch or form except its own?

Asking pertinent questions is a quick means of explaining.

No sound is more beautiful or dissonant than *Gagaku*, Japanese Court Music, a nearly extinct art contemporary with the Court of Charlemagne, which is being revived at the University of California, Los Angeles. This is a severely formal and ordered music, dissonantly enriched by microtones which the player improvises according to strict traditional rules. And here is microtonal music by the American composer Harry Partch, dividing the octave into 43 intervals instead of the traditional 12, played on instruments of his own invention. The Partch music is very unlike that familiar music we inherit from Europe; comparison with the Japanese Court Music suggests what destiny might hold in store for it.

Partch subdivides the component of dissonance so finely that in his scale it ceases to have relevance. One can speak the intervals as well as sing them. One can write for brass instruments, as Partch writes for them in his *Revelation in the Courthouse Park*, so that the play of microtonal off-pitches resembles that of King Oliver's famous marching band, which preceded jazz.

Lou Harrison composes without modulation or dissonance in polyphonies of an extraordinary acoustical purity, using the same grammar as Schoenberg but a different idiom and syntax. His form is therefore entirely distinct from that of Schoenberg. He writes music as purely for arbitrarily pitched percussion instruments. If the future of the art goes his way, music may start over where it stopped in the 15th century, before the drift to tempered scales and vertical harmony.

Vertical harmony also can be recreated and expanded, as Carl Ruggles, Arnold Schoenberg, and Igor Stravinsky have demonstrated.

No composer since Schoenberg has been so scorned by his fellows and so prolific of creative ideas as John Cage. Originality is deviation within a frame; Schoenberg and Cage are metamorphic inventors, whose every new phase releases unexpected shapes and fields of musical idea.

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Cage invented the percussion orchestra, for which the very young Lou Harrison composed a literature. Cage first put to musical use the variable frequency sound curve, source of subsequent electronic composition. He is still ahead of his disciples, the European electronic composers, Stockhausen, Berio, Maderna. They are trying to compose electronic "music"; Cage composes within the electronic medium for its own sake. His *Fontana Mix* challenges at once their esthetics and their technics. Cage originated the arbitrarily tuned "prepared piano," with bolts, washers, and rubber fruit jar rings in and on the strings, an entirely unexpected approach to microtones. He challenged the traditional concept of musical order with his music by chance, now widely but more conservatively imitated. In what some may call "non-music"—which negates every habit by which the trained listener has until now identified music—John Cage has spread his imagination beyond any other composer of his generation. His Concert for Piano and Orchestra is an anti-music, as the scientist now speaks of anti-matter.

The future direction of music lies, as I read it, between Lou Harrison and an art of pure acoustical consonance at one extreme and John Cage and "anti-music" at the other extreme. The art of music may split apart, as dramatic art has split between the stage and the moving picture. In these areas John Whitney, my collaborator for this lecture, has made his contribution.

All that I have learned about tuning and temperament has come to me from Wesley Kuhnle in Los Angeles, whose *History of Tuning* on tape may soon radically alter much that we believe we have known about the sound of European music before the 19th century. Through his work composers may rediscover the fascinating variations in harmony, musical coloration, microtonal embellishment, and formal design which may be obtained by variant tunings of the 12 note scale.

These are the chief extensions of the art of music into the new field of Sound that composers are exploring. For the first time since the 16th century, when the full recognition of vertical harmony precipitated a new grammar of European musical composition, the art of music is again at a beginning.

Now I should apologize to those of my readers who have heard parts of this song sung before. I would point out to them that there is a great difference between a sort of indifferent acquiescence and the vivid and actual participation in creative discovery by which a listener can place himself in the position of posterity.

How To Become Posterity, that is the embracing title towards which my little treatises are all pointing. Music appreciation, a term we have learned to abhor, is a wrong term only when we apply it to music that is past, music that is dead for us because our appreciation takes it as it comes and can do nothing with it. When music is actively appreciated, it enters into the present experience and into the future. We share in the future because we make ourselves actively aware of the live past, the living present-moment.

How To Become Posterity, that is what the true composer is working at all the time; that is what the true listener learns in pursuing the true composer beyond and out of sight of the safe landmarks of tradition. Tradition is not lost, though the listener may feel sometimes that he is. The more actively each learns to know the whole landscape of the past and present, the more surely the composer and the listener can find a wise direction into the future. Neither will be fearful at finding new music in new sound.

NOTES IN PASSING

(Continued from page 9)

shapes; I don't like them, but who am I? The English like the Jaoul houses. Paul Rudolf likes Ronchamp. More power to them. We are going through a foggy chaos; let us enjoy the multiplicity of it all . . ."

There is something virile and vigorous about the angry young men: they are all noise and action, but out of the violence we anticipate the explosion of a new creativity. There is something pathetic about the angry old men: and their protests are often compounded of disillusion, weariness, nostalgia and romanticism. They seek not a way towards but an escape, not only from the present but from the implications of the future.

The picture of diversification which we have been drawing would seem to indicate innate tendencies to disintegration in all

spheres—political, social, spiritual, cultural. There seems in this picture to be no common denominator in the aims, hopes, feelings, and desires of mankind. This may be patently and demonstrably absurd, but what is very real is the difficulty that one man has in communicating his objectives in an understandable form to his fellow man. Perhaps it is true, as a radio play once averred, that there is no conversation between us, only parallel—but unheard—monologues. The critical problem for mankind is the problem of mutual understanding, and basic to any understanding is the need for communication.—**GILBERT HERBERT**

Excerpts from "The Architect and the Problem of Cultural Integration—" RIBA Journal

BOOKS

(Continued from page 8)

exist and demonstrates specific examples of his work in which these problems have been solved. In addition to the numerous black and white illustrations which accompany the text, there are four portfolios of color reproductions which provide extremely vivid demonstrations of the principles explained in the text.

This book will be remembered for its summation of Sutnar's enormous contribution to the field of graphic design. Anyone, whether he be a professional or a layman, who is looking for guidance in solving problems of visual communication will find that Visual Design in Action can be an indispensable tool. If it is ever going to be possible to find books, magazines and advertisements which can be read without fighting the "so-called design," Sutnar's book Visual Design in Action will have made its mark.

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(383a) Knoll Furniture Guide—Illustrated 30-page brochure of the Knoll collection of contemporary furniture designs for residential and commercial interiors. Includes chairs, sofas, tables, chests, cabinets, desks and conference tables by internationally famed designers including Florence Knoll, Eero Saarinen, Harry Bertoia, Mies van der Rohe, Isamu Noguchi, Pierre Jeanneret. Knoll Associates, Inc., 320 Park Avenue, New York 22, New York.

INTERIOR DESIGN

(359a) Interior Design: Crossroads have all the components necessary for the elegant contemporary interior. Available are the finest designed products of contemporary styling in: furniture, carpets, draperies, upholstery, wall coverings, lights, accessories, oil paintings, china, crystal and flatware. For booklet write to: Crossroads, 15250 East Whittier Boulevard, Whittier, California.

LIGHTING EQUIPMENT

(366a) Contemporary Fixtures: Catalog, data good line contemporary fixtures, including complete selection recessed surface mounted lense, down lights incorporating Corning wide angle Pyrex lenses; recessed, semi-recessed surface-mounted units utilizing reflector lamps: modern chandeliers for widely diffused, even illumination; Luxo Lamp suited to any lighting task. Selected units merit specified for CSHouse 1950. Harry Gitlin, 917 3rd Avenue, New York 22, New York.

(368a) Recessed and Accent Lighting Fixtures: Specification data and engineering drawings of Prescolite Fixtures; complete range contemporary designs for residential, commercial applications; exclusive Re-lamp-a-lite hinge; 30 seconds to fasten trim, install glass or re-lamp; exceptional builder and owner acceptance, well worth considering.—Prescolite Manufacturing Corporation, 2229 4th Street, Berkeley 10, California.

(389a) Seven entirely new concepts in recessed incandescent lighting are illustrated in full detail in a handsome new catalog just brought out by Marvin Electric Manufacturing Company. Complete specifications are given on the manner in which these seven new concepts are utilized in over 100 new lighting fixtures. For brochure, write Marvin Electric Manufacturing Co., 648 South Santa Fe Avenue, Los Angeles 21, Calif.

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(360a) Target Lighting: For home, library, museum there is a small, handsome Art Beam-Lite to provide concentrated lighting on large or small paintings, objets d'art, and sculpture. This compact light can project a round, rectangular or oblong beam up to 25 feet. Also from France comes the Art Beam-Lite 100, 102 and 105 which have detachable bases and interchangeable lenses. For complete information write to: Morda Distributing Company, P.O. Box 24036, 12041 Wilshire Boulevard, Los Angeles 24, California.

(376a) Architectural Lighting: Full information new Lightolier Calculite fixtures; provide maximum light output evenly diffused; simple, clean functional form: square, round, or recessed with lens, louvres, pinhole, albalite or formed glass; exclusive "torsiontite" spring fastener with no exposed screws, bolts, or hinges; built-in Fiberglas gasket eliminates light leaks, snug self-leveling frame can be pulled down from any side with fingertip pressure, completely removable for cleaning; definitely worth investigating. — Lightolier, 11 East Thirty-sixth Street, New York, N. Y.

PHOTOGRAPHIC REPRODUCTIONS

(334a) The Averycolor reproduction is a color-fast, non-glare, satin-finish print of durable photographic stock, not acetate base material. Two years of research coupled with twenty years of experience in the photographic field have resulted in a revolutionary change in making reproductions from architectural renderings. Other services include black-and-white prints, color transparencies, custom dry mounting and display transparencies. For further information write: Avery Color Corporation, 1529 North Cahuenga Boulevard, Hollywood 28, California.

SPECIALTIES

(364a) Contemporary Clocks and Accessories. Attractive folder Chronopak contemporary clocks, crisp, simple, unusual models; modern fireplace accessories; lastex wire lamps, and bubble lamps, George Nelson, designer. Brochure available. One of the finest sources of information, worth study and file space.—Howard Miller Clock Company, Zeeland, Michigan.

(388a) New Proportional System—The Kidjel Cali-Pro is a new instrument created from the discovery of the one universal ratio for all proportions in design, modern and classic, and spatial harmony in all types of layout. This new found ratio solves the secret of proportions as achieved by the ancient Greeks, now brought up to date in a precision-built, light-weight instrument, easy to use. For detailed information write to: Maurice Kidjel, Pres. — Kidjel-Young & Associates, Inc., 1012 Piikoi Street, Honolulu 14, Hawaii.

(225a) Kaiser Aluminum, for Product Design & Manufacture: A new 24-page booklet containing up-to-date information on Kaiser Aluminum mill products and services is now available. Includes data on aluminum alloys, forms, properties, applications and availability. An abundance of tables and charts throughout provides convenient reference material. Booklet may be obtained from Kaiser Aluminum & Chemical Sales, Inc., Industrial Service Div., Dept. AA, 919 North Michigan Avenue, Chicago 11, Illinois.

STRUCTURAL MATERIALS

(326a) Construction Plywood: A new fir plywood catalog for 1958 has been announced by the Douglas Fir Plywood Association. Indexed for A.I.A. filing systems, the three-part, 20-page catalog presents basic information on fir plywood standard grades and specialty products for architects, engineers, builders, product design engineers, and building code officials. Sample copies may be obtained without charge from: Douglas Fir Plywood Association, Tacoma 2, Wash.

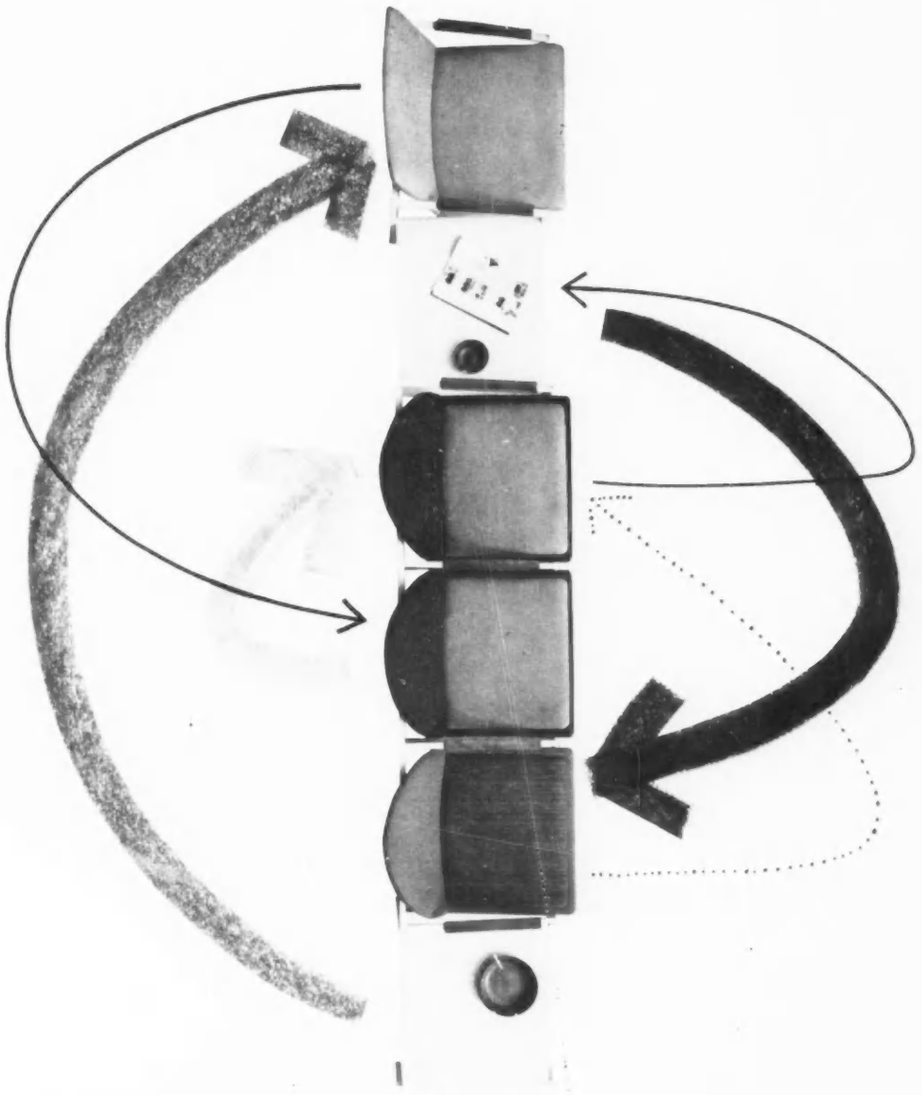
(386a) The most varied selection of concrete block, more than 670 designs, sizes and colors, is carried in stock by the North Hollywood Block, Division of Kaiser Steel Corporation. Supplementing this selection is an exclusive "Custom Design" service which offers architects and designers the opportunity to have blocks of their own original designs produced at North Hollywood Block. Write to North Hollywood Block, 12323 Sherman Way, North Hollywood, Calif.

(390a) "Ideas from Architects' Own Redwood Homes," a 16-page color brochure, shows how architects in every part of the country have used redwood for siding, paneling, beams; other free literature available from California Redwood Association include the newly published "Exterior Finish" booklet illustrating in color, bleaches, stains, and other natural finishes, as well as possibilities of painted redwood siding and redwood with no finish whatever; "Garden Redwood," 16 pages of indoor-outdoor living ideas; "Redwood Goes to School," showing latest ideas in wood school design; Architect's File containing the above booklets and a special selection of data sheets; individual data sheets answering thousands of questions about redwood; REDWOOD NEWS, quarterly, discussing newest and most interesting uses of redwood in architecture and industry. Write Dept. AA-1, California Redwood Association, 576 Sacramento Street, San Francisco 11, California.

SURFACE TREATMENTS

(361a) Completely new full-color 28-page catalog of Mosaic ceramic tile manufactured in California and distributed throughout the area west of the Rockies. First presentation in booklet form of tile in the Harmonitone color families; includes decorated glazed wall tile, new Staccato palette in one inch square tile, and Byzantile. Catalog available upon request from The Mosaic Tile Company, 131 North Robertson Boulevard, Beverly Hills, California.

(362a) Ceramic Tile: Brochures, samples and catalogs of Pomona Tile's line of glazed ceramics are available to qualified building professionals. Included are "Tile-Photos," full color, actual size, reproductions of Pomona's Distinguished Designer Series of Sculptured and Decorator Tile. This series features unique designs by many of America's foremost designers including George Nelson, Paul McCobb, Saul Bass and Dong Kingman. Pomona Tile also offers a complete line of glazed floor and wall tile in 42 decorator colors. For further information write: Pomona Tile Manufacturing Co., 621-33 North La Brea Avenue, Los Angeles 36, California.



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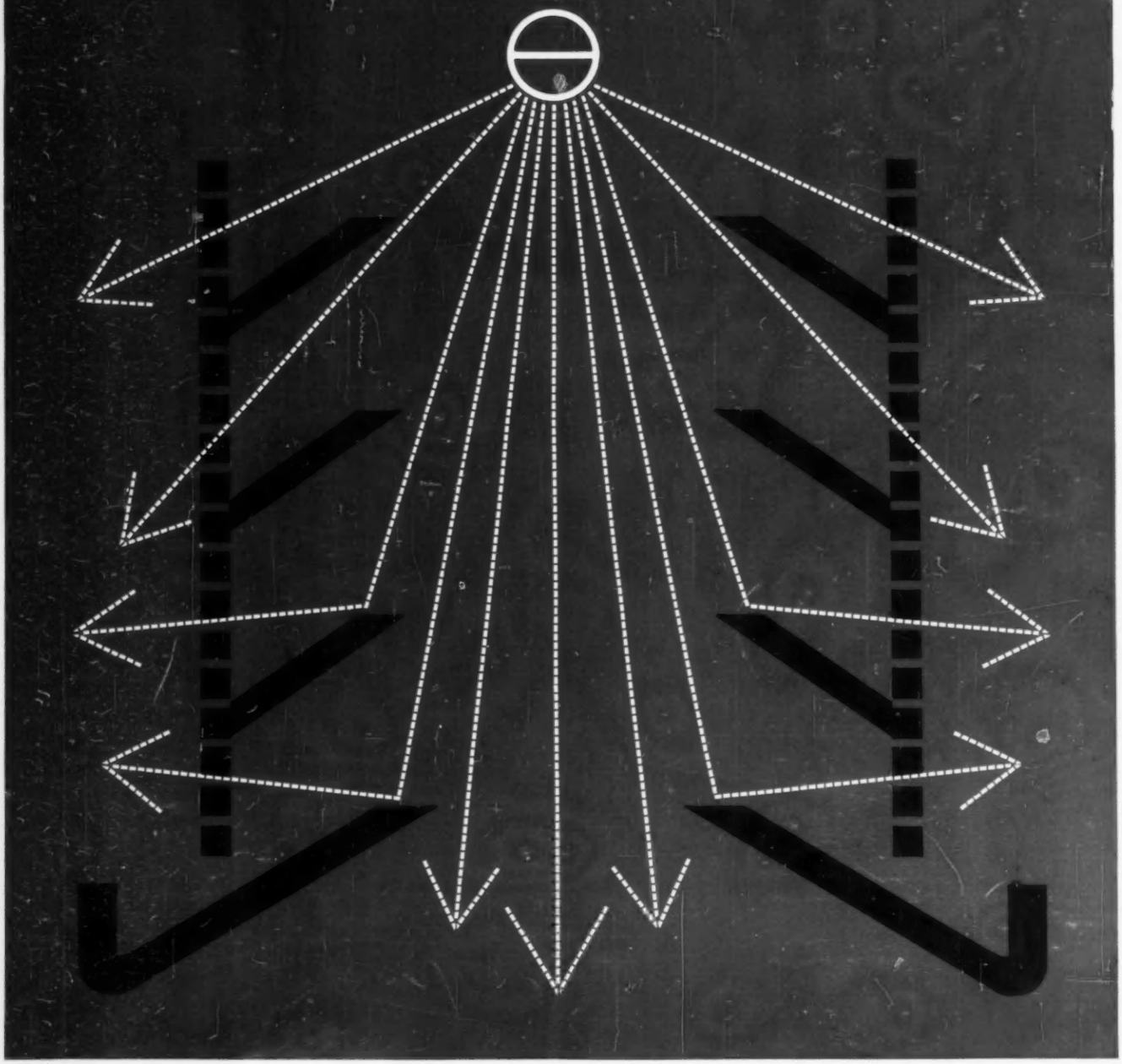
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